GLEANINGS IN BEE CULTURE

Published by The A. I. Root Co., Medina, Ohio

H. H. ROOT, Assistant Editor.
A. I. ROOT, Editor Home Department.
E. R. ROOT, Editor.
A. L. BOYDEN, Advertising Manager.
J. T. CALVERT, Business Manager.

Entered at the Postoffice, Medina, Ohio, as Second-class Matter.

VOL. XXXVII FEBRUARY 1, 1909 NO. 3

EDITORIAL

By E. R. ROOT.

ENCOURAGING RAINS IN CALIFORNIA.

DURING the latter part of the season, conditions were any thing but favorable for honey in California. There has been unprecedentedly cold weather and drouths. While the former, perhaps, would not have made very much difference with the yield from the sages, the latter would. We just received word from Mr. M. H. Mendleson, at Ventura, dated Jan. 11, to the effect that conditions in his vicinity have greatly improved on account of splendid rains, and these rains had continued clear up to the time of his writing. Already it has done, he says, a lot of good, and bees are breeding up fast.

"WE LOVE HIM FOR THE ENEMIES HE HAS MADE."

THE big corporate interests are still after Dr. Wiley's scalp. The fact is, *that* gentleman can not be coerced, scared, nor bought. For years he has been a thorn in the flesh of some of those food concerns that have been putting out cheap whiskies, and adulterations, or poisonous preservatives in foods to keep them from spoiling. This servant of the people, according to their program, must be disgraced and put out of office. The crowd that has been using benzoate of soda, a poison which they use to preserve certain foods that are not up to the standard, are particularly bitter in their attack. If Wiley wins out it will mean the loss of thousands of dollars to them, but a probable saving of the lives of thousands of innocent children as well as some adults. Every one should write to the Secretary of Agriculture, Washington, D. C., and to the President of the United States, asking that Dr. Wiley be retained. While we have no idea that he will lose his position or standing with the powers that be, it is proper that the Secretary of Agriculture and the President should know that the best people of this country are back of him—and of them too, for that matter.

Dr. Wiley's opposition appears to be backed by organization and millions of capital, and, as a matter of course, they are leaving no stone unturned to accomplish his undoing. Fortunately, we have some of the great journals like *The American Grocer*, *The Louisiana Planter and Sugar Manufacturer*, and *The New York Times* standing up for him; but *the people should make themselves heard also.*

We note with pleasure that the New York State Wholesale Grocers' Association, that met on the 12th of last month in New York city, adopted some ringing resolutions indorsing him as a "man of unassailable honesty," and "one of the chief champions of pure food."

OUTDOOR-WINTERED COLONIES UNDER SEALED GLASS COVERS; SEALED COVERS VS. ABSORBENTS.

WE are again making a series of observations relative to the condition of colonies in chaff hives, said hives having a large sheet of glass set in putty over the tops of the frames, thus making an hermetic sealing. It will be remembered we made some observations of this kind about ten years ago when sealed covers were up.

The arrangement makes it very easy to note the position, size, and condition of the cluster of bees on different days by simply removing the telescope cap, together with the tray containing packing material which rests down on the glass.

The colonies under glass are doing nicely, and the clusters are healthy so far as can be seen. As heretofore, we find the clusters mainly near the front of the hive over the entrance. Nine times out of ten this will be the position of the bees during the fore part of winter, and they remain there until the stores are consumed, necessitating a change to the center or rear of the hive.

The glass covers show just how the moisture is disposed. Near the outside edges and around the corners moisture in the form of sweat will be found; and as it collects in the form of drops it trickles down the sides of the hive; and as all hives slant toward the front, the water will run out at the entrance. When we have absorbing cushions this same moisture goes up into them making them damp. In this condition during extremely cold weather the cushions freeze. A damp cushion or one frozen is a bad thing next to and on top of the bees.

PROGNOSTICATING A HONEY FLOW.

THE article by Mr. Virgil Weaver, in this issue, on how to prognosticate a flow of honey from white clover, contains much food for thought. We shall be glad to have our readers go over it carefully, and see if the theory put forth by our correspondent tallies with the facts in their localities. If Mr. Weaver is right* it may be necessary for some bee-keepers next summer to adopt migratory bee-keeping—that is, find pastures new. Some of our most successful beemen have done that and are still doing it. For example, Mr. W. Z. Hutchinson, of the *Bee-keepers' Review*, finds that not all the raspberry bushes in Northern Michigan have been burned.

* It will be noted that Mr. G. M. Doolittle, who is known as a close and accurate observer, in his article in this issue apparently does not agree with Mr. Weaver.

Near two of their yards there are some patches that probably will give them their usual crop. In localities where the berries have been burned he will move to the alsike regions. Then, as he properly remarks, no one knows what the willow-herb will do two or three years hence.

It is important that every producer study his locality, and, if possible, ascertain whether he will have a crop another season. It is Mr. W. L. Coggshall, of Groton, N. Y, who Mr. S. A. Niver reported used to shin up basswood-trees early in the season to study the condition of the buds in order to gain from them some idea as to whether there would be a crop from basswood or not.

BEE-CELLARS; WHEN A LARGE AMOUNT OF VENTILATION IS REQUIRED.

THIS year we have only 14 colonies in the cellar, where formerly we had as many as 200 to 250. The temperature runs considerably above 60, and yet the bees are wintering finely. When we had a large number of colonies in this same cellar, the bees became very uneasy until we put in a tin pipe connecting the outdoor air with this inner cellar. There was so great a difference in temperature that there was a good circulation, and so long as fresh air kept pouring into the bee-room they would keep quiet, providing the temperature did not go too high.

It is true that one *can* winter bees in a repository with but little ventilation — that is to say, with the cellar closed up tight; but such wintering is possible only when the temperature is kept uniformly at 45, or at least not varying more than one or two degrees. In such condition the bees go into a state of semi-hibernation, when respiration is very low. When the temperature goes higher than 50 or 60, there must be an abundance of fresh air.

Just as we have been learning that air from outdoors will cure consumptives, and make sick people well, we are also learning that fresh air for the healthy makes them more vigorous in mind and body. What is good for man is also good for bees; and why not? Even in the poultry world it has been discovered that fresh air is a very important factor for the chick as well as the mature hen. So, then, if the temperature of your winter repository is variable see that there is suitable ventilation.

WINTERING BEES IN A WARM ROOM.

ON page 1489, Dec. 15, we referred to the fact that we had a colony of bees in one of our offices, stationed up in front of the window, having an entrance channelway from the hive to the sill on the outside. It will be remembered that Mr. G. W. Phillips, one of our former employees, wintered successfully two years in succession, a colony of bees in this way in his college study room, where a fairly uniform living temperature was maintained throughout the winter. He found that the bees not only wintered well, but reared brood, and actually increased in strength.

The results of the experiment thus far in our office are highly satisfactory. The colony is raising a lot of good brood, and fresh-laid eggs are found in some frames. Young bees are hatching out, and the colony seems to be prospering very much as any colony should in May or June, notwithstanding it is too cold for the bees to fly. Every two or three weeks there has been at least one good day when the bees could get an airing. The temperature in the office is kept at about 68, and does not vary very much throughout the winter.

If this colony should continue to do as well, we shall seriously consider putting up a house-apiary, the same kept warm by steam. Each colony will have an entrance outdoors, and the covers will be sealed down. "But, hold on," some of our readers will say; "A. I. Root tried that over thirty years ago, and it proved to be a failure." Yes, we admit that; but he had nothing but a common kerosene-stove in order that he might have a uniform temperature. Over the tops of the frames he had nothing but quilts loosely placed. It is presumable that the air in the room was fouled by the lamp, causing uneasiness on the part of the bees. But where steam heat is used, the air will not be affected, and, besides, every colony will be shut in, deriving its supply of air from outdoors.

Just suppose that this plan should prove to be a success. One could have tremendously strong colonies early in the spring. While brood-rearing would necessarily consume the stores, yet the trade of syrup or honey for young bees would be a good one.

There really seems to be no reason why a colony or colonies having entrances leading outdoors, with the hives inside kept at a temperature of 70 degrees, should not give good results. One would naturally suppose that the warm air surrounding the hive during mid-winter would force the bees out; but, strangely enough, the bees from our indoor hive never fly out except when the bees in the chaff hives in the large apiary come out.

The sides of the hives in the office are of glass, and it is a pleasure to see those healthy bees lying almost dormant, but spread out over the frames as if it were summer.

This is an experiment that any one can try, and we suggest that our readers try it and report results.

SHIPPING HONEY IN CARLOADS ON SIGHT DRAFT WITH BILL OF LADING ATTACHED; SOME OF THE TROUBLES OF THE SHIPPER AND CONSIGNEE.

THROUGH the various correspondence that has been going on through this office for the last five or six years, it is increasingly apparent that the plan of sending a carload of honey, freight, c. o. d., is far from satisfactory. Time and time again we are called on to arbitrate differences between shipper and consignee. It happens in most cases that the former is not the producer, but a middleman who has bought up various lots of honey — enough to make up a carload, and then puts it on the market. The honey is sold at a stipulated price, freight c. o. d., that is, the bill of lading with sight draft attached is sent to some bank in the town of the consignee for collection. The latter is allowed the privilege of examining the car before unloading; and if it is not satisfactory he may refuse it.

So far the deal looks simple and fair to both parties; but, unfortunately, it does not work out so beautifully in practice in many cases. If the con-

signee lives in a city, the opportunity for inspection is very limited. He may not have the car sidetracked, possibly, for several days. He can not very well get at it except in a big freight-yard, where there are hundreds of other cars closely set in together; and even when he gets into the car there is but very little opportunity for him to look over the contents. The fact of the matter is, even in large or small towns the honey can not very well be looked over without removing the entire shipment; and that, of course, means acceptance; and even when removed, he finds the front cases of comb honey sometimes faced with the best goods, leaving the inferior out of sight. Such examination as the consignee may make in a car fails to a great extent to give an idea of the contents of the entire shipment, and right here is where the jangle comes. The shipper retorts to the complaint of the consignee something in this way: "The honey was shipped to you with the privilege of examination before paying the draft. The fact that you accepted it and paid the draft entitles you to no consideration. If it is not up to specification you should not have accepted it."

The consignee has very little redress in law if the shipper is not disposed to arbitrate. He has the whip hand and the law* on his side, and he can do just as he pleases about making any allowance for short weight, for improper grading, or badly filled or off-colored sections.

The great trouble with this sight-draft bill-of-lading manner of doing business is that it begets carelessness, not to say dishonesty, on the part of the middleman who makes up the shipment, because he knows that the consignee will have very little chance to examine the goods. If, further, he puts the poorest down in the bottom or in the back end of the car, and the best goods near the door, he has the consignee at a great disadvantage, for the latter may assume that the first run will hold up clear through the car, accept the shipment, and pay the draft. The result is a nice little row; threats to show up the other fellow through the journals; lawsuits, etc.

We know of no reason why carloads of honey could not be shipped to a *responsible* house, and paid for in ten days, like all other goods. This puts a check on the shipper; and if the house is responsible, and has a reputation for fair dealing, a producer or middleman who collects the shipment runs very little risk in getting his pay. He will see to it that the honey is up to representation clear through the car. If it is not, the consignee can well afford to pay the expense of the shipper to come and examine the goods and the two appoint a referee to settle the difference.

It may be said, however, on this kind of deal, that some of the commission houses that are not honest would take advantage of the fellow at the other end of the line. Perhaps; but a little inquiry will usually reveal who can be trusted. Shippers would do better to deal only with known and responsible houses rather than to be attracted by glittering high prices from an unknown concern.

It would seem to us that a possible solution of the whole difficulty, perhaps, would be, in the case of unknown firms, to ship the honey freight c. o. d., but instruct the bank that the goods are to be unloaded and examined thoroughly before the draft is paid. It might take a week's time to go through the shipment. In case the honey is not accepted, the shipper should be notified by wire, and either be asked to come on and take charge of the goods or instruct some other house to take them.

There are two other objections to the general plan in vogue of sight draft with the privilege of inspection. If consignee rejects the car, the shipper must immediately find another buyer. Perhaps he can do it at once, but more often he can not, in which case demurrage will be charged up to him. Suppose it is cold weather; then the honey in the mean time suffers irreparable damages. Suppose the car is bumped into by another car and the honey broken. The railroad company is responsible; but it is not an easy matter to prove and collect for damages. On the other hand, if the consignee is allowed to unload the car, the points of difference between the parties to the sale can be settled while the honey is in safety.

The real seat of the whole trouble, after all, is carelessness in grading, or, perhaps, we had better say, in some cases dishonest grading. If the goods are carefully packed, and up to standard as to weight and for each grade, there will be no trouble, even on the present basis. Such a policy is bound to be a winner in the end; for more cars can be sold at the same place, and probably at higher figures, than the other fellows who are known to fall below the grades called for.

We have had so many complaints in the last few years of these carload shipments that we feel tempted at times to give all the facts, with the names of the parties to the deals, and let the beekeeping public judge for itself. A little airing is a good thing sometimes, and we may be obliged, for the good of the fraternity at large, to open things up. But we much prefer not to do so if matters can be adjusted between the parties.

* We showed this to our attorney since the above was written; and he says if the consignee can *show* that the shipper misrepresented the grading or weights he can recover, even though he did accept the car.

A POINTER TO THOSE BUYING QUEENS.

WE have been having some correspondence with Mr. G. C. Greiner, one of the writers of GLEANINGS, regarding queens for next year. We sent him one lot of queens from a choice breeder which proved to be satisfactory; but the second lot did not come up to the first by considerable. After some little investigation it developed that the latter were from another breeder. We then stated that the breeder of the first lot had died, but that we had a few of her tested daughters which we would sell for $5.00 apiece. But he replied by saying he would much prefer to pay $30.00, the amount he has appropriated, for 30 untested queens from an extra-choice breeder than for six extra-select queens from that same breeder at $5.00 each. His argument was this: That out of the 30 untested he could himself select at least five or six queens that would be the equal of our $5.00 queens; and, besides, have all the others, two dozen, ranging in valuation from $2.00 to $3.00. No, it did not pay him to buy high-priced queens; but he thinks it is a good practice to lay in a good stock of choice untested queens from a fine breeder, and Mr. Greiner is right.

STRAY STRAWS

DR. C. C. MILLER

CARLY W. REES, p. 63, ought to try shaking the bees in front of the hive after moving that short distance. I have considerable faith in shaking for that purpose. [Good suggestion, and it will work too.—ED.]

A. I. ROOT used to have honey peddled from a vegetable-wagon. Joseph Tinsley, *Irish Bee Journal*, p. 76, gets a milk-seller to sell honey. The milk-wagon has the advantage that it goes every day in the year. [Good suggestion!—ED.]

FRANK C. PELLET, you're all right about feeding below in winter when the cluster is down enough. I've done some feeding that way, but I used comb honey. But are you not a little off in your second sentence, page 59? You prefer a pan of syrup on top to any of the feeders on the market, because "there is less danger from robbing than from an entrance feeder." Are all the feeders on the market entrance feeders? Can a pan of syrup on top be any safer from robbers than a Miller feeder?

R. C. AIKIN'S articles are thought-provoking, and that one on page 61 is no exception. I think there is more money in comb honey than extracted *for me*, else I would extract. But I seriously question that under general conditions as much comb as extracted can be obtained. I'm not sure but I'll say *under any conditions*. If as much comb can be obtained, please give us an instance of a single case where, other things being equal, 25 or 50 colonies gave as much comb as an equal number, side by side, gave of extracted.

DON'T GO CRAZY in too much of a hurry about shaking bees. That it makes them tame as kittens is valuable; also that it makes them stay put when moved. But neither of these things proves that shaken bees store more honey. I don't say they don't, but satisfactory proof is yet lacking. [No, we would not get "crazy;" but somebody must have enough enthusiasm to try out the thing, whether there is any thing in it or not. We positively know that it is a great help in bringing about the safe introduction of queens.—ED.]

R. GOELDI, *Schweiz. Bztg.*, 176, reports this: Drones were hatched out in a super over an excluder, and, of course, had never flown. One evening he took the super back of the apiary and took off the cover. Promptly the drones sailed out, circled about, and went straight to the hive from which they had been taken. He counts this proof of the sharp sense of smell of the drones. A skeptic at my elbow suggests that from the super also flew workers which knew their old location, went to it, and started a call at the entrance, and the drones followed them. [Quite right.—ED.]

DON'T ANY of you beginners look at that picture on page 60 and conclude you'll go to using box hives for fancy comb honey. If Mr. Spickler had used a movable-frame hive he would have gotten just as many and as good sections, and his bees would be in better shape for the future. Neither should you decide to hive four swarms together. To get 76 sections from *each* of those early swarms, if hived separately, would be nothing remarkable. [Beginners are not likely to be misled by the picture. It is interesting to show, however, what even poor conditions can produce. —ED.]

HERE'S WHAT we need: One or more stations where all the stock is such that pure fertilization is certain; also parcels post. Then you can send a virgin in a fertilizing-cage with ½ lb. of bees and ½ lb. or more of candy, and have her returned a laying queen. Visionary? Well, that's just what they have in Switzerland. [Half-pound packages of bees will be sold extensively next year. Any thing under 3 lbs. will go as cheaply as by mail from California to Maine. Half-pound and one-pound packages of bees weigh respectively 2½ and 3 lbs. It follows, then, that the express charges from Medina to San Francisco, for instance, on a half-pound or a pound package of bees will be only 68 cts., and that is figuring the express on bees at 1½ times the ordinary rates. The express for 300 miles would be correspondingly less, or about 50 cts. Apparently, then, we do not have to wait for parcels post.—ED.]

HONEY sold at 15 cents costs 5 cents for drayage, freight, leakage, and commission, p. 65. I should like to see a concrete itemized statement for that. I think that 5 cents ought to be cut in two unless the amount sent be very small or the distance very great. [At a meeting of the Northwestern Association, held at Chicago some fifteen years ago, a certain man named Dr. C. C. Miller was present, and also ye editor. The question was asked, if comb honey sold in the open market at 15 cents what would be the net price the producer ought to get on an average? As nearly as we remember, the figures stood 10 cents to the producer if the honey brought 15 cents. It is up to you, doctor, to show the figures, for you are the fellow who helped make them. Let us examine some of the items: There is freight, commission, cartage, leakage, storage, shortage, and, on large amounts, insurance; and in the case of some commission houses, dishonesty.—ED.]

EXTRACTED HONEY "can be kept indefinitely," says R. C. Aikin, p. 62. That's orthodox; we all say it; but there may be no harm in sticking a question-mark after it. See what Wesley Foster says, p. 21. Now if honey deteriorates like that, so as to lose all of its honey flavor, and become only a sticky syrup when kept in a comb, is there not *some* deterioration when kept in a can? [Mr. Aikin's statement is a little strong. While honey will keep a number of years, and still retain its character, if not overheated, yet there is apt to be a slight deterioration, both in flavor and color after the sixth or seventh year. Just the other day we found a sample of mountain-sage honey that was put up by A. I. Root in 1885. It was laid aside and was not discovered until a few days ago. The honey was not candied in the least; but it had turned to the color of ordinary buckwheat. We did not test it for its flavor, for the amount was small, and we knew that the Bureau of Chemistry would be glad to get it providing it had not been tampered with by any human tongue to change its character.—ED.]

CONVERSATIONS WITH DOOLITTLE

ABOUT THE CLOVERS.

"Mr. Doolittle, will you please tell what you know of the drouth and winter-killing of the clovers? I see so many different opinions expressed in GLEANINGS that I do not feel it should be left there; for in the part of York State in which I live we are almost entirely dependent on the clover for our crop of honey. As you live on about the same degree of latitude that I do, your knowledge in this matter would be of help to me. If the drouth has killed the clover, then my honey crop must be a failure till the clover gets a foothold again."

On page 1487, Dr. Miller says, "No rain fell from August 11 till Sept. 27—47 days," and he further adds that an examination of his pasture revealed an "abundance of young clover," even after such a prolonged drouth. We hardly had rain enough to lay the dust in our public highways from Aug. 1 to Nov. 1, or for 102 days, and yet our clover, where not killed by too short pasturage, seemed as lively as ever when winter set in. I have never, in all my experience, known of clover being killed by drouth. The roots go to a depth of from a foot to twenty inches in the soil, so are able to stand all the drouth we ever have in this section of the country. I was quite sure of this before this fall; but when some of our most noted agriculturists went into print with the statement that we had all better hold on to all the old hay we had, because the drouth was killing, or likely to kill, all of our meadows, I took especial pains to watch the results. Even the timothy and June grasses are mostly alive, so that a favorable spring will bring us out in good shape. Therefore I think the questioner need have no fears for his crop of honey from clover, if the season from now to blooming time is as good as the average, unless the farmers of his section are so careless of their best interests as to "pasture their land to death." Dr. Miller found the conditions in his horse-pasture much the same as we find them here, where horses, young stock, and especially sheep, are kept too near the starving-point on pastures and meadows during the latter part of the drouth.

Dr. Miller seems to question the statement, p. 1426, that "what kills the clovers is not *drouth* but too much water in the ground, and hard freezing, resulting in what we farmers generally call *winter-killing*," and well may he question such an assertion. But the doctor is nearly as far out of the way, since he thinks that "it isn't so much freezing that hurts as thawing" But he gets very close to the matter in the next few words where he puts the blame on *rapid* freezing and thawing. But under certain conditions, rapid freezing and thawing have no bad effect on clover, as will be explained further on.

I have been a close observer regarding this matter for forty years, or ever since I began keeping bees, and every observation showed the same cause for the winter-killing of the clovers. They *heave out*. Now, what is meant by "heaving out"? With the ground full of water it becomes very soft, and thus "puddles" itself close around the crown and upper part of the tap root of the clover-plant. Now it begins to freeze, and in doing so the crown and top of the root are gripped by the expansion of this puddle until they are held as in an iron grasp. As the freezing also lifts the soil by its expansion, the clover root is stretched as the process goes on; but as there is a little elasticity to the roots, this first freezing does no harm, even if the continued cold causes the ground to be frozen one, two, three, or four feet deep, as is sometimes the case on some of our exposed land. Whenever there comes a thaw after this first freezing, no harm comes to the clover by its freezing again afterward, no matter how often, *so long as there remains an inch or more of frozen ground underneath*; but if the thaw is continued until all the frost goes out of the ground, when it comes to freeze again the crown and root are again gripped at the top; and as the stretch has already been taken out of the roots by the first freeze (the soil about them having become loosened through this freezing), they are now lifted by the upper expansion of the soil, and thus the whole plant is materially injured by being lifted upward. Another thaw comes; the puddled soil settles; again it freezes, with another grip about the top of the root, and again the plant is lifted. If this continues long enough, either during winter or early spring, the plants are lifted little by little during each change of the temperature that goes below the freezing-point, till the whole of the plant, roots and all, lies prone on top of the ground. Whole fields are then winter-killed, if all of these fields have soil of like heaving nature. All clay, clay loam, muck loam, and such like soils, are called "heaving" soils, because, when they become saturated with water, they incline more or less to become soft and run together like thin cream; and as each freezing and thawing tends to fine the soil, the more freezing and thawing there is, the tighter the grip of each succeeding freeze, and the greater the lift each time. Sandy or porous soils do not tend to puddle any more than any soil would when dry, and the clovers are little injured on porous soils during winter, or on any soil which is dry, or where the frost, after having entered the soil, holds sway until the final thawing in the spring. It is the continued freezing and thawing, at any time of the year, after the first hard frost has gone out of the ground, that winter-kills the clovers on heavy land.

If the roots are raised only very slightly—from one-fourth inch to one-fourth their length—then they are injured to a certain extent, but not so much but that they will nearly or quite recover, if there is a wet spring, so the drawn roots can catch hold of the soil again. But with a dry spring, following a heaving winter, the most of the clovers on heavy land are winter-killed, whether drawn quite out of the soil or not.

I hope that this discussion may give a little help to those who have not understood the winter-killing of clover.

Alfalfa roots so deeply that it is a very rare thing that frost ever enters the ground deep enough to disturb the lower part of the roots; and the root, being so strong that it rarely breaks off through the pulling process, is able to stand and thrive on soils where the other clovers can not survive except during a very favorable winter.

GLEANINGS FROM OUR EXCHANGES

By W. K. MORRISON

MORE PREJUDICE.

The *Gaceta Apicola de Espana* is quite angry, and with good reason, for the chief of the rural police at Castellon de la Plana has just promulgated a decree forbidding the keeping of apiaries within the territory under his jurisdiction. Our Spanish contemporary does not mince his words, and characterizes the decree as stupid. He says it excites his compassion on account of the supine ignorance displayed by one who ought to know better; but he is also indignant at the slur cast on bee-keeping as an industry, more particularly as bees are recognized elsewhere as very beneficial in agriculture.

●

LEVULOSE IN HONEY.

A correspondent in the republic of San Domingo asks me the question, "How shall we get the levulose out of honey?" The easiest way known to me is to store the honey in a cool chamber to granulate. Then slowly warm it in a can having a perforated bottom. When it begins to melt, the levulose runs first, leaving the mass of honey sugar behind in the can. It appeals to me very strongly, however, that tropical bee-keepers can dispose of their honey to better advantage. Honey-bread is very salable; and as half of it by weight is honey, quite a lot can be disposed of in this way. I think most of it is made by means of ammonia and not by yeast. Honey-bread is very healthful, and good for persons suffering from indigestion. It has the merit of keeping sweet and palatable for months without any special protection. It ought to sell anywhere. In New York it is sold at 25 cents a loaf, and it is worth that.

●

BENZOATE OF SODA TO BE BARRED; THE EFFECT OF THIS DECISION ON SYRUPS AND GLUCOSE.

On reliable advices it is stated the United States Department or Agriculture will shortly issue a ruling absolutely prohibiting the use of benzoate of soda as a preservative of food. Of course, this applies only to interstate commerce; but the probabilities are that all the States having pure-food laws will follow suit soon afterward. This will have the effect of stopping the sale of a lot of inferior preparations of catsup, fruit-butters, jellies, jams, and syrups. It will injure the sale of glucose, as the latter is much used in connection with these manufactures.

Such a decision will greatly encourage legitimate manufacturers who produce a line of such goods in which only first-class materials are used—that is to say, good ripe fruit and granulated sugar. To say the least, this decision will have far-reaching effects. It will probably be signed by all the members of Roosevelt's board of experts, who, from independent experiments made by themselves, have decided to support Dr. Wiley in every particular so far as relates to benzoate of soda in food.

MORE ALFALFA HONEY; MORE ALFALFA TERRITORY.

The Colorado people are determined on supplying us with more alfalfa honey. By an overwhelming vote of 74,052 to 30, the settlers living under ditch on the proposed Uncompahgre project, which contains the famous Gunnison tunnel, have decided to tax themselves an additional $10.00 per acre so as to furnish money to complete the tunnel (now two-thirds built). The original estimate of the cost of the whole project was set down by the government engineers at $25.00 an acre; but this estimate has proved too low. The increased cost of material and labor, together with the extraordinary difficulties involved in constructing a large tunnel six miles long through a spur of the Rockies has caused this change. The tunnel will be concreted on all sides, yet it will cost only $3,500,000. It takes clear grit and great common sense to vote like that. On these great United States projects there will be no landlordism. No renting of farms will be permitted. These enterprises are the glory of our age.

●

LOWERING THE TARIFF ON UNREFINED SUGAR.

At the present moment a desperate struggle is going on between opposing factions in the sugar industry. The sugar trust is fighting for a low tariff, more particularly on *unrefined* sugar. The reason is not far to seek, for the trust men own or control immense plantations in Cuba and Porto Rico. The present tariff was framed to suit their wants, and a 20-per-cent rebate was allowed on Cuban sugar, practically all of which was clear profit for the sugar combine. They do this by controlling all the refineries; and as the tariff is *high* on refined and *low* on unrefined, they absolutely control the sale of all foreign sugar coming into this country.

The United States consumes 3,000,000 tons of sugar a year. Of this, 1,250,000 will come from Cuba, 250,000 from Porto Rico, 400,000 from Hawaii, and probably 300,000 from the Philippines. The rest will come from the beet-sugar districts in the West, and in Louisiana and Texas, where cane is grown. With a little encouragement *we can grow all our own sugar with consummate ease*. Southwest Texas can produce, without trouble, 1,000,000 tons of cane sugar per annum, and Louisiana and Florida probably an equal amount. The beet-sugar States can take care of the rest. No increase in the price of sugar is necessary; but the tariff must be levied to suit the sugar-planter, not the sugar trust. Whatever influence bee-keepers possess will naturally be placed with the men who *grow* the sugar, and it may be very good policy for bee-keepers to line up and help their fellows in Louisiana and the West. The growing of beets in the West has been a great factor in building up the country, but the industry is merely in its infancy. It can be made a giant. Cuba can readily make good the loss of the sugar trade by growing bananas, pineapples, avocados, mangoes, and similar crops, which give much larger returns than sugar, and build up a superior civilization.

When it comes to levying a duty on honey and beeswax the bee-keepers will be glad to have the assistance of the sugar-producers.

BEE-KEEPING AMONG THE ROCKIES.

By Wesley Foster.

COMB HONEY IN GLASS.

The method of putting up bulk comb honey in glass, shown on page 28, Jan. 1, should never be practiced where honey granulates at all easily.

One preserving company in Denver has been bottling honey with a piece of comb inserted, and it was very pretty when first put out, but is now nearly all candied solid. On the bottles is this label: "Should this honey granulate, place bottle in hot water till liquid." The piece of comb of course will melt, and form a mass of wax on the top of the honey whenever this is done, and will likely cause both grocer and consumer to feel as if they had been sold a gold brick.

SORTING COMB HONEY.

If not already done, now is the time to re-sort all unsold comb honey. One is almost certain to find some which is candied, and this should be taken out, as well as any that shows any signs of granulation whatever. The combs that are candied solid can be cut out and rendered, and all the partly candied sold for just what they are.

The best place to do this sorting is before a good-sized window, so the combs can be held up to let the light shine through if it will. The edges of the comb next to the wood usually show the first signs of candying.

Dec. 26 I went over sixty cases of comb honey and found five of them candied or partly candied.

When selling honey to the home grocer it pays to go over his stock occasionally and exchange any which is candied. There is often a great loss of trade resulting from selling a good customer a section of candied honey. The grocer should know how to detect any slightly candied section honey.

SIXTY-POUND CANS NOT STRONG ENOUGH.

Mr. Scholl is right, page 1493, Dec. 15. The 60-lb. honey-cans are too light. They should be made of heavier tin. I have seen a can burst when the case was dropped only a few inches, and in handling two or three hundred cases weighing 135 lbs. each, one is apt to work with the least effort possible, and often let a case bump the ground too hard. Cans made of heavier material can be secured, but they cost ten or fifteen per cent more.

Second-hand cans should not be used for shipping long distances, as they burst much easier than new cans.

The cases also, in many instances, are too light, and are made of very poor material. A case should weigh fifteen pounds, and have a center partition-board between the two cans. The great percentage of broken cases is due to the splitting of the end board, allowing the sides to spread. I have had an end split while the case was in my arms, and the cans fall out of the case before I could set it down.

Freight-handlers use hooks in moving pieces, and they strike these hooks into the hand-hole, often breaking through the thin wood wall and piercing the can itself. The hand-hole should be done away with, and a cleat, say an inch thick and two inches wide, nailed at the top, and also one at the bottom at each end of the case. The cover should extend over the cleats and be nailed to them. These four cleats would save the ends from splitting, and would make it even possible for the end boards to be made of two pieces. The two cleats at the top would also give a far better grip for the hands than the hand-holes.

IRRIGATION, ALFALFA, AND HONEY.

I have read from time to time the reports of new irrigation projects in the west by Mr. W. K. Morrison. There are several points relative to irrigation and bee culture in the West and Rocky Mountain region which he has not brought out—if he is familiar with the facts. On page 22, Jan. 1, Mr. Morrison refers to the Garden City pumping project of Kansas. Kansas raises alfalfa, some with irrigation and some without; but alfalfa honey in paying quantities has never become common. The same thing is true of Nebraska. From North Platte to Kearney are great fields of alfalfa, but bees do very little there. Alfalfa raised by means of irrigation, and lacking the soil and climatic conditions, does *not* furnish nectar. The mountain valleys and slopes, both east and west of the continental divide, yield the most continuously. When more than one hundred miles away from the mountains the crops are very risky.

Another thing, a new irrigation district is not profitable to the bee-keeper for several years. The first year after water is to be had, alfalfa is not sown. The next year there may be some, but it does not bloom, and the third year is the earliest to expect any nectar from that source, and then it will be small. Five to ten years more will be required for sweet clover to get in and line the ditch banks and waste places, thus putting on the finishing touches to a location.

In this connection there is one other point which is of vital interest to Rocky Mountain bee-keepers. There are alfalfa districts such as that surrounding Ft. Morgan, Colo., where good yields of honey were the rule ten years ago and now, though alfalfa is still grown, the bees do not make the surplus that they did in former years, and most of the bees are for sale. The lower part of the Arkansas Valley in Colorado is another district where this is the case. A good many things enter in to bring about this effect. First, the plowing of the land for sugar beets, though alfalfa is still grown very plentifully, and is the best soil-renewer. Second, the farmers may cut the alfalfa sooner than formerly. Third, insect pests increase where the opportunity for life is greater. The yellow butterfly, or one almost yellow, works on the alfalfa, and undoubtedly gets considerable nectar. Then the mite, which causes the onion blight, is credited with getting into the alfalfa bloom and making the nectar-fountains dry up. The fourth element entering in is the loss by the soil of the elements which aid the plant to secrete nectar. The luxurious growth and heavy nectar secretion seem to go together, and alfalfa is not now making the rank growth in several sections of Colorado that it did ten or fifteen years ago, and the yields of honey are not equal to those of former times.

NOTES FROM CANADA

By R. F. HOLTERMANN.

That telescope excelsior cover, page 57, pleases me. I use a telescope cover, and like it.

●

DUTY ON BEESWAX.

If bee-keepers used more wax than they produce, more than they produce at a profit, then higher duties would injure them. If the manufacturers use a large quantity of beeswax which the bee-keeper supplies, then a duty should benefit the bee-keeper financially. My private opinion for years, based in part on feeding, has been that the cost of producing wax is greatly overestimated. A bee brought up to the condition of wax secretion, and then kept at it under proper conditions as to temperature, etc., could be made to produce wax at a good profit with wax at 30 cts. per lb.

Bee-keepers would also gain much by a more frequent change of the combs in the brood-chamber.

Where disease is likely to occur, a more frequent change of combs should help much to combat these conditions; and on that ground alone, to encourage this added protection would be well worth considering.

●

MOVING BEES.

On page 18 Dr. Miller refers to various statements that have been made to the effect that bees gain by being moved. There are probably few if any men on this continent who have made more moves with bees than I have. Last season alone, as nearly as I can figure it, I moved four car loads, four boat loads, and nearly fifty team loads of bees. My experience convinces me that, if bees are moved carefully, and extreme excitement is prevented by ventilation and watering, they benefit by a move, because they uncap stores; but this can be accomplished with much less trouble and expense right at home. If bees are not very carefully prepared and treated when moving they may get excited, become thirsty, and utilize the food which has been given to the larvæ, thus destroying them. This, of course, is a very serious setback to a colony. When the tongues of the bees are pushed through the screen, and moved about in an excited way—*give them water.*

●

MOVING BEES IN WINTER.

The above subject, page 17, Jan. 1, has exercised many, and I feel particularly interested in the subject at the present time. My first experience in moving bees in cold weather was in the late autumn of 1901. I then bought a lot of bees in New York, and had them moved about two miles to the station by means of teams. The car, during winter weather, was two days on the way, and upon arrival in Brantford it was winter weather with snow. The bees were hauled on sleighs about a mile, placed without a flight in winter quarters, in a first-class cellar. They came through in excellent order with the exception of one which starved, and there was no sign of dysentery. The bees had clover honey for stores, and some of them were on pretty close rations.

In another instance I bought 35 colonies, which were hauled by wagon over 20 miles to the bee-cellar here (this cellar is illustrated in the A B C and X Y Z of Bee Culture). They reached the cellar in the evening, and, not wishing to disturb unnecessarily 483 colonies already in the cellar, I left the 35 outside until next morning, when they were taken down. I will report how they winter. They were brought here Dec. 31, and at this date, Jan. 11, after careful examination with a candle, in no respect can I see any difference between these and the other bees. The bees of the one lot were as tightly clustered, and as oblivious to candle light, as those of the other.

●

THE MARITIME BEE-KEEPERS' ASSOCIATION

The Maritime Bee-keepers' Association, the leading officers of which are portrayed on another page, is an organization which is making a determined effort to place bee-keeping on a better footing in these provinces. It wishes to encourage in any one a desire to engage in the industry if the person is so situated that he is likely to succeed. All the officers are men of weight and influence, and they come in contact with the public in connection with the offices which they hold.

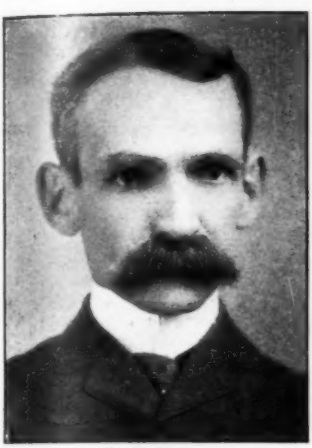
All the members of the association get GLEANINGS, and for the benefit of these and others it might be well to point out that frequently the bees store honey, in the fall of the year, from aster, and, so far as I can judge from statements I have heard made in Michigan, Pennsylvania, New York, and Ontario, the bees are liable to winter badly on such stores. Under such circumstances it is advisable either to put into the brood-chamber combs of sugar syrup previously fed, or to give the bees a 15 to 20 lb. feed of syrup made in the proportion of 2½ parts of granulated sugar to 1 of water. Feed after a frost has come to destroy practically all blossoms. Bad wintering appears to be a common experience with Maritime bee-keepers.

The quality of the honey exhibited at the annual fair was the best I have seen there during my three years' experience as judge and lecturer. Mr. Baker, the secretary, had a particularly fine display of honey, including very choice comb. Others had extracted honey which would pass in Ontario as of first-class quality.

The exhibitors were: B. W. Baker; Craig Bros., W. B. Wallace, Miss Julia A. Corbett, and Chas. Pierce.

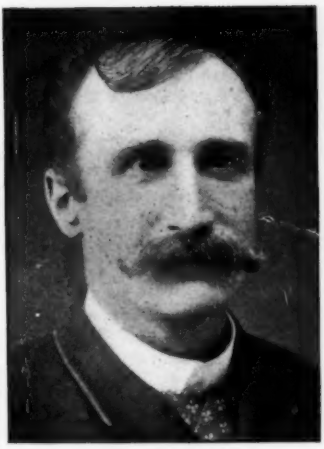
At this show Mr. Wallace had some comb honey. It was not white, neither was it amber, but rather a very light ocher color. He described a plant, which we decided was *hardhack*, as the source. After taking a section home and cutting it I detected the hardhack aroma. Two other members of the family, independently, did the same. This honey has an excellent body, a fair color, and is more aromatic than any other Canadian honey I ever tasted. In fact, I would have put it down as a tropical honey.

Rev. A. E. Burke, Alberton, P. E. Island, has been of material assistance in helping bee-keepers in organization. At the evening address on "Bees, Their Modern Management and the Value of Honey as a Food," there were over 2000 people present. The Halifax papers estimated the audience at 3000.



INGLIS C. CRAIG,
President.

B. DONALDSON,
Vice-President.



B. W. BAKER,
Secretary and Treasurer.

OFFICERS OF THE MARITIME BEE-KEEPERS' ASSOCIATION, N. S., CANADA.

See "Notes from Canada" in this issue.

A BOTANY OF HONEY FLOWERS.

BY GRANT STANLEY.

One of the foremost questions a beginner is likely to ask is, "When shall I put on supers?" and he is generally told to do so when he sees the first white-clover bloom. I hardly think this is always a definite reply to the question. The beginner may not have any white clover in his locality, or his bees may possibly need the supers somewhat in advance of the white-clover bloom. We also notice inquiries as to the source of certain pollen or honey the bees are gathering. We see so many questions asked along similar lines that I have often wondered why some one has not undertaken the task of writing a book on the subject of flowers which are visited by the honey-bees. We have many books devoted to bees and honey production, but not a single volume has come to my notice on honey flowers. A book devoted to such flowers, and properly arranged, would be of fully as much value to the bee-keeper as one treating on bees and honey. In fact, the two belong together. Such a work would certainly be indispensable to the beginner. He could find out just what flowers to look for in his locality; tell when they bloom, and whether they yield honey or pollen. He could also ascertain what kind of soil the various plants prefer, and whether to look for them along the roadside, or in field or forest. He could also find the name of a flower from the illustration shown in the book, and any other information that would likely be of interest to bee-keepers.

Such a work would be of great value to the bee-keeper desiring to move into a new locality or another State, as he could find out in advance just what plants abound in the new locality. The book should contain every possible known honey or pollen producing plant in America. It should be durably bound, and of convenient size to carry in the pocket.

THE EFFECT OF THE NATIONAL PURE-FOOD LAW ON PRICES OF HONEY.

Just about the time of the passage of the pure-food law, the editors of the various bee-journals were extolling the merits of such a law so strongly that I thought if only a portion of what was being mentioned should turn out a reality, it would certainly be a great boon for bee-keepers everywhere. The editor of GLEANINGS seemed to be in the lead in making reference to the value of such a law. Scarcely an issue of the journal came out without more or less reference being made as to what we could expect or hope for should the bill pass After watching the result since the passage of this bill, I must confess that it has done even more than was predicted. It has worked wonders for bee-keepers, and will do a great deal more. There is no doubt whatever that it is the greatest law in the history of this country, enacted in the interest of bee-keeping. Since the passage of this bill, honey has been steadily advancing in price, and the demand for it the past season was greater than I have ever seen it before. I notice that the merchants are eager to buy in almost any quantity, and they do not hesitate to pay an advanced price over that of former years. They seem to have much more confidence in honey than formerly, and upon inquiry as to whether the consumer had any suspicion as to adulteration since the passage of the law one merchant remarked that this had nearly disappeared. I was also told there was an increasing demand for honey since the passage of the law. The passage of this bill has done more to remove the suspicion of adulteration in honey than years of advertising. Since the law became effective we scarcely hear any thing mentioned relative to adulteration. The passage of the law has been the means of placing honey in the very top notch of food luxuries. It has a market all its own, and has no competition, and this is just as it should be.

Now that we have such a law, it is the duty of

Mr. Stewart is a fresh-air advocate; he sleeps beneath an apricot-tree, opposite his office and study.

every bee-keeper to see that the honey he offers for sale shall be of the very highest quality. All the legislation in the world will not help our business if we are thoughtless and careless about the quality of our product. We must make it "food fit for the gods." See to the quality first, then dress it neatly and attractively. It is the quality of an article that increases the sales, and not attractiveness or neatness. Attractiveness without quality is a deception and fraud. So let us see that we allow our honey to remain on the hives until it is fully sealed over and ripened before offering it for sale.

Nisbet, Penn.

CONTRA COSTA COUNTY, CALIFORNIA.

The Conditions Favorable to Bee-keeping and Fruit-growing.

BY W. A. PRYAL.

Contra Costa Co. lies east and north of Alameda Co., and it has the distinction of having a large part of its boundary washed by three bays—San Francisco, San Pablo, and Suisun. It is a mountainous county; and yet, withal, it has some of the best and most fertile valleys that we can boast of, though none of them are to be compared in size to the big valleys of the State. For climate these valleys are the equal of any in California. Being sheltered by high hills and mountains, they are seldom visited by fogs; winds are rare, and frosts are seldom known. For this reason all kinds of fruit flourish to a wonderful degree. In some places one kind of fruit will do better than another, owing, mainly, to the nature of the soil. About Lafayette, Bartlett pears and apples reach perfection; in San Ramon Valley the finest English walnuts one could wish to see may be found. (Walnut Creek, the most important town in the valley, takes its name from the fact that the native California walnut was found growing there.) In the same valley cherries do so well that they bear the palm along with those of Alameda and Santa Clara counties. Then Alhambra, Amador, and other valleys have their peculiarities. Some grow grapes, some prunes, others grains and vegetables. Even grizzly old Mt. Diablo sports some fine orchards, vineyards, farms, and apiaries upon its sun-kissed slopes.

I promised to visit a bee-keeper by the name of William E. Stewart, nearly one year ago, but circumstances prevented my doing so until

A portion of Mr. Stewart's apiary in Contra Costa County, Cal. A hay-field in front and an orchard on the opposite side of the creek. The extracting-house is behind the white honey-tank.

MR. MONROE'S HOME.

The rear portion was made of timber cut by Mr. Monroe in what was then the redwood forest across the hills from Oakland, thirty miles away, and hauled by the chopper in one load over a primitive road fifty-six years ago. Some of the old clapboards are yet on the house, and are plainly visible in the picture. The hand-split and shaved redwood shingles, which lasted forty years and more, were succeeded by sawn ones of the same wood.

this fall. I found him very busy winding up the season's work, the main portion at the time of my call being drying prunes and husking almonds.

He is thoroughly posted in all things progressive in farming and orchard lines. He took up the study and care of bees some six years ago, commencing in a small way; but he soon bought out an apiary across the valley. After this he purchased colonies and swarms wherever he could get them within twenty miles. To-day he has an apiary of over 100 colonies, many of which are in hives of divers shapes and makes. He has chosen the regular Langstroth frame, and many of his hives are of the eight-frame dovetailed pattern; but he believes it would be better if he had all his bees in ten-frame hives. Although the past two years have not been good ones for honey, still his crop was sufficiently heavy to pay him for the trouble bestowed upon the bees, and more. So pleased is he with the result that he is seriously considering discontinuing that portion of his horticultural work that comes during the honey season. This accounts for his working over a portion of the peaches, plums, and apricots in the orchard to prunes and almonds, as the latter do not come in with a rush; and, besides, they can be harvested long after the honey crop has been attended to. He has produced both comb and extracted honey, but he believes extracted honey will pay the better, except in years when the bees work on flowers that yield dark-colored nectar. Speaking of the honey resources of the valley and hills about, he considers them poor, owing to the valleys being cropped with non-honey-secreting plants (except fruit-trees which bloom too early to be of any great use to the apiarist, as the colonies have not sufficiently built up to put a sufficient nectar-collecting force into the orchards. Of course, this nectar stimulates brood-rearing, and is valuable on that account). The hills, which are of a black adobe nature, are not covered with tree and plant growth such as one sees in most other portions of California, especially on the east and north side of the hills and mountains Nearer Mt. Diablo there are better ranges. There is a variety of soils, and, possibly, more moisture.

While Mr. Stewart has some Italian bees he seems to prefer the blacks. He has some Caucasians which he likes fairly well; but he believes that, if he were to give his attention to selecting and breeding blacks he could perfect a strain that would be the equal of any bees in the world for hardiness and "workability." He says these bees have been more than half a century in California, and they may be said to form a class and race all by themselves. I shared this view with him, and I have committed myself to it in writing on a previous occasion. Who knows but the California "native" or brown bee will be bred for export the world over? Such a thing

Mr. F. E. Monroe, the venerable bee-keeper of grizzled old Mt. Diablo, pointing out to Mr. W. E. Stewart holes made in a redwood frame by wax-moths. Mr. Stewart holds a pine frame in his left hand.

is possible, though some may now look upon the prophet as visionary.

I found the apiary well equipped with bee-appliances, the most notable of which was a big six-frame reversible honey-extractor. Mr. Stewart has a large honey-tank in the yard, which may be noticed in accompanying half-tone. The apiary is not compact; it is strung out along the creek, and the hives are far apart. This is considered a good plan, as it reduces robbing to a minimum. He is going to lay a track and install a hand-car so the honey can be run into the extracting-room. He contemplates building soon a model honey-house with work and extracting room attached.

I must not fail to mention that this enterprising young gentleman is an active worker in the church he belongs to, and takes much interest in civic matters. I'm sorry there are not more like him, as it is common repute that the affairs of his county sadly need a moral uplift. His views on the liquor-traffic are pronounced, too, and I believe with him that we would have better government if the saloon could be eliminated from the politics of the dominant parties. The bosses' offices and homes, too often, are amid the fumes of bad beer and worse whisky. But the saloon's going, thank God!

Mr. Stewart drove me to visit an elderly apiarist on Mt. Diablo, some four miles from the former's home, and I found this one of the most pleasant rides I ever took.

We called on Mr. Francis E. Monroe, a veteran apiarist, on the Livermore side of Mt. Diablo. We found him one of the pioneer ranchers of California. One would wonder why a man could come to such a place over half a century ago when the surrounding country was little better than a wild woods, and when near the then young civilization were to be found fully as good soils at a price that was almost as cheap as government land. But he picked out this place because he considered it one of the most ideal spots he had seen in his travels over the United States.

Although Mr. Monroe has been sixty and more years in California he still retains many of the characteristics of the far-east Yankee, even to the manner of speech. He told me some of his life-history. He was born among the rugged hills of Vermont, over ninety years ago, and but for a slight cold which afflicted him at the time of my visit, he was hale and hearty, although, according to his statement, "not nare so spry as I yuster be." I got him interested in the subject of relative merits of redwood and white-pine frames. He was shown that the former are flimsy, and, when the moth begins depredations in a hive, the redwood frames are eaten to pieces very quickly. He was pointing out to Mr. Stewart some of the doings of moths when my camera's eye caught him in the position shown in the accompanying half-tone.

I noticed a multitude of bees at work about the trunk of a beautiful live-oak that ornamented a portion of the front garden. Investigation revealed the fact that Mr. Monroe was practicing open-air feeding, and the bees were just having the time of their lives. Poor things! too many of them were paying dearly for the feast, many being drowned in the sweet liquid, Others were so bedaubed that they crawled away through the dust and dirt, few of them ever reaching the hives. The reason of the feeding in the fall was not that the bees needed food, but because there was some unsalable honey on hand, and to let the bees have it was about the easiest though not the best way to get rid of it.

I was surprised at the excellence of the honey gathered upon this mountain. It was light in color, heavy in body, and of as fine flavor as any white-sage honey I ever tasted. The yield most years is good. Seldom is there a failure.

Oakland, Cal.

THE AUTOMOBILE FOR THE BEE-KEEPER.

BY A. KIRSCH.

Very little is mentioned in the different periodicals in regard to the use of an automobile in the apiary. Probably it would interest the readers to hear a little about it. The writer of this article was in need of some conveyance to transport his family to and from church on Sundays, and he was thinking of buying a horse and surrey; but the largest rig would not quite hold his family, and two trips he would not make. He finally decided to get an automobile; and in looking

AN AUTOMOBILE FOR THE WHOLE FAMILY.

through the daily papers noticed a single-cylinder machine advertised for $100. On examination it proved to be in good condition, and was bought. After a season's use it was found to be satisfactory and economical. It is a light touring-car and can go 15 to 20 miles an hour. Every Sunday it is used for going to church, and it takes entire charge of carrying to any place the writer's family, which consists of nine in all. It makes 12 to 15 miles per hour with this load, and beats any farmer's team of trotters with half the load.

Now as for the use that an automobile can be put to in an apiary. The second picture shows how the machine can be arranged to saw firewood and make hives and fixtures. The car is raised in the rear, and a four-inch belt is put directly on the tire of one of the wheels, and the other wheel is prevented from turning by blocking it or fastening it with a rope. The speed is just right for an 18-inch saw. Quite a thick log can be cut. The cylinder-cooling system has to be connected by means of a hose with a larger tank or barrel filled with water, for, by standing still, the air current can not cool the cylinder sufficiently. The writer sawed his firewood in this manner, and found it very satisfactory. To run the extractor, all the bee-keeper has to do is to project a shaft through the honey-house, with a small pulley, to produce a slower speed.

If one wishes to pump a large amount of water he can procure a belt pump, connect it up, and then he has a gasoline pumping-outfit. In case of outapiaries the bee-keeper can take off the body of the machine in a short while and put a home-made platform in its place to hold hives, cans, barrels, and other paraphernalia, and he can get there in a hurry.

In the writer's opinion one of the single-cylinder machines is the handiest one for all-around purposes. The price should be no objection. They can be bought from $100 up, second-hand.

In regard to running it, there is no more trouble about it than in running an ordinary gasoline-engine used on farms. If any one studies carefully the functions of the different parts, and is careful in handling the machine, it should last a good many years. The running expenses are very low. We drove nearly 600 miles within the last 6 months, and the expense for maintenance was $9.00. If the amount were twice as much it would not equal the expense of a horse and wagon.

Brooklyn, N. Y.

[We know of quite a number of bee-keepers who use an automobile in their business, and find it a practical machine. We think that the price paid by our correspondent was unusually low, however. Second-hand *runabouts* can often be purchased for $100; but a second-hand light touring-car like the one shown would ordinarily cost from three to four hundred dollars.

It is entirely practicable to use the machine for power; but a belt should be put on *each* rear wheel; for when one wheel is held in the manner described, while the other does the work, a very severe strain is put on the differential gears, which would very soon wear them out, and it would mean a big expense to renew them.—ED.]

SAWING WOOD WITH THE POWER FURNISHED BY AN AUTOMOBILE.

BEES CLOSE TO STREET NOT A NUISANCE.

An Open-air Colony.

BY JACOB WAGNER.

The engraving shown on opposite page represents my apiary where I have been keeping my bees for over 25 years. When I first started I kept them inside the building in the background, but now I have them outside, and use one part of the building for storage, and the other part to extract honey, etc. The larger building to the right is my shop, where three to four men are working on benches doing cabinet and carpenter work. I have found it more practical to keep bees outdoors than inside. I have them under an arbor of grapevines, which I consider an ideal place for them. It will be noticed that the sidewalk and street are just outside the fence. This is one of the most-used thoroughfares in the place, and in all these years no one has been bothered by my Italians, which surely shows that they are a rather good-natured crowd. Some seasons I have had 50 to 60 colonies; but this last season I had only 15, spring count, which increased to 26. These produced over 3000 lbs. of extracted honey and 320 lbs. of comb honey, so I have reason to be well satisfied.

The other engraving shows a swarm of bees that I found on the limb of an apple-tree, eight to ten feet above the ground. They were hybrids, but very gentle, and did not bother me in the least while climbing up, when my face was not more than two feet away, and my hand still closer.

Through failure to find a better place the bees selected this rather odd place for their permanent home. They had built 6 combs 10 inches wide, and 14 to 16 inches long, which contained some brood and a little honey when I discovered them. When they started to work I suppose the limbs or twigs were very thick with leaves, thus forming a covering or natural roof that must have looked inviting to them.

East Amana, Iowa, Nov. 3.

THE WINTER-KILLING OF CLOVER.

Freezing and Thawing of Clay Soil Hurts Clover; Plants in Sandy Soils Not so Likely to be Winter-killed.

BY R. F. HOLTERMANN.

The term "winter-killing of clover" is applied to the destruction of clover-plants, during the winter and spring, by means of the freezing and thawing of the soil about the plant; secondly, to the water freezing on top of the ground and over the planst, and to a certain extent about it.

The nature and condition of the soil is an important factor in the freezing and thawing process on clover. The soil which will retain the most moisture is apt to be the most injurious in the above process, because, when the soil with the contained water freezes, there is expansion in proportion to moisture contained. A well-drained soil tends to friability; moisture passes down readily; it will retain less than a more compact soil. Soil composed of fine particles such as the clays will retain a higher percentage of water than the sands; and when conditions are favorable to frequent freezing and thawing, *as a rule* more injury is done to clover on the former soil. I have

been compelled to move apiaries from sections where the land was of a clay nature to sandy sections, because scarcely any clover had survived in the clay, and there was still a goodly quantity in the latter.

If freezing takes place, and the ground and plants are well protected with snow, the frost may not penetrate the soil at all. If it was frozen, and if it remains frozen until the season of growth, one freeze does practically no harm.

It is well known that, in sections of country where the snow falls early in the winter, and remains until the season of growth, covering it especially during March, when the sun is strong during the day, and it freezes hard at night, thawing out the ground, especially on southerly exposures during the day, and again freezing it at night, the winter-killing of clover is practically unknown.

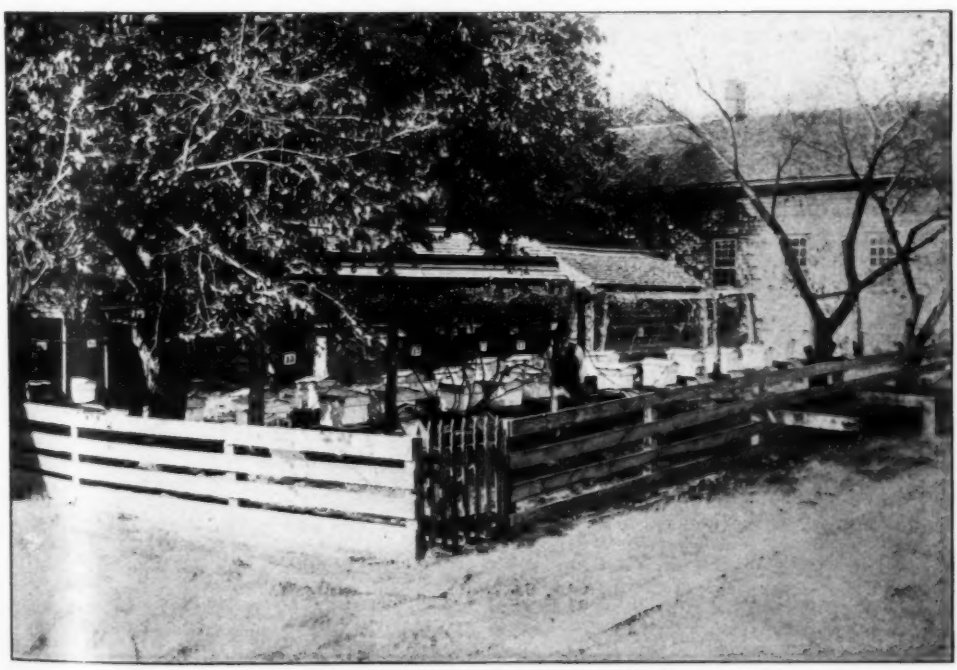
The clover-plant has main roots, smaller roots, and fibrous roots. The smaller roots contain what might be called the mouths through which moisture and food are taken from the soil and transmitted through channels to the various portions of the plant.

Let us now suppose that the soil freezes to the depth of three inches. This three inches of soil, through freezing, expands; and the greater the percentage of moisture, the greater the expansion.

Owing to the solid nature of the soil underneath, and owing to the fact that there is little if any room for lateral expansion, the frozen mass of soil must move upward. The effort at lateral expansion also tightens the hold of the soil on the clover roots; and as it is forced upward it draws the plant with it. The stronger roots below are likely to be drawn upward also. But those not having sufficient powers of adhesion to resist the hold the soil has on them, like the sting of the bee remain in their place and are broken away from the remainder of the plant. The first roots to break off are, of course, the fibrous ones which take up the material needed to sustain and build up the plant. As soon as the soil thaws it falls apart and loses its power to draw the plant back to its former position. At the next freezing the operation is repeated, and the plant gets another heave upward, and so on. I have frequently seen in a field the clover-plants with the roots sticking several inches above the ground. Rains are of some assistance in compacting the soil. The intelligent farmer also attempts to save the field by running a roller over it as soon as the ground will permit. In part he forces the plants back into the soil in this way. The main benefit from the rain, however, is to keep the injured plant from drying out. The plant generally has some feeder-roots left, and in a moist condition throws out others and recuperates. If, however, drying winds prevail, many more die, and we say the clover has been winter-killed. The more vigorous the growth, and the more favorable the condition for plant vigor, the greater the yield of honey; and such a condition is not likely to obtain with so many roots broken.

Where the soil is frozen, and owing to the snow thawing, or rain, water lies on the surface in depressions, and the water freezes, the clover-plant is liable to smother if this condition continues for any considerable length of time. Some say the sun shines through the bright ice and the plant is burned or scalded; but this latter theory is not very generally accepted.

Brantford, Can.



JACOB WAGNER'S APIARY, AMANA, IOWA.
Although this apiary adjoins the street, there has never been a complaint against the bees.

A COLONY THAT BUILT COMBS IN THE OPEN AIR.

SOME CONDITIONS THAT AFFECT THE CLOVER-HONEY CROP.

Clover Does Not Yield Much Honey the First Year of Its Growth; a Dry Fall Kills the Old and Not the Young Plants; No Clover-honey Crop During a Year Following a Drouth.

BY VIRGIL WEAVER.

[In our Sept. 15th issue, p. 1198, 1907, Mr. Weaver had an article in which he took the ground that a severe drouth would kill the old clovers; that young clovers from seed would spring up in the meantime, as they would not be choked by the old clover; but as the plant does not yield much honey the first year of its growth there will, consequently, be little or no honey that year. He further claimed that, on the second year, there would be a yield of honey from it.

This article, although published in September, was written May 5, 1907. He then made the prediction that there would be no honey in 1907, north of the Ohio River, but a "bumper crop" in 1908 — a prediction that was almost literally fulfilled.

In the present article he has given additional data along the same lines. He has, apparently, given the subject not a little attention and study, but Mr. Doolittle, another close student of nature, apparently does not agree with him. See his article in this issue.

We should like to have this subject thoroughly discussed. In short, is Mr. Weaver correct in his claims? Do the facts in your locality bear them out?—ED.]

I want every reader of this article who lives in the drouth-stricken area to mark my words; that is, that during this coming year there will not be ten per cent of a white-clover crop east of the Mississippi River. There are, of course, sections here and there where the rainfall has been sufficient to make a clover crop for 1909. I have been trying to hammer this very thing into the heads of bee-keepers for the last five years — that is, that there is no honey-flow following a dry year. I have studied this white-clover question closer than any thing else, as I deem it the most important question connected with bee-keeping. I have not missed a white-clover crop in seven years, although there were two complete failures in Central Kentucky during this period. I will explain: I had a good crop in 1902, averaging 100 pounds per colony, and again in 1903. The fall of 1903 in Central Kentucky was very dry, killing out the white clover wherever I saw it, so I shipped my bees to Iowa for the season of 1904. Inexperience in shipping bees long distances by freight cost me several colonies and weakened the rest; but laboring under these difficulties I secured an average yield of 75 pounds per colony. The year 1904 was dry again in Central Kentucky, and there was an average rainfall where my bees were in Iowa, so I remained where I was for another season, and my 1905 crop in Iowa was 60 pounds per colony. The season of 1905 in Central Kentucky gave an excess of 1.25 inches rain, and I knew what this meant, so I shipped my bees back there. Out of 130 colonies shipped I landed and wintered 115, and sold, in 1906, 12,000 lbs. of white-clover honey, and increased to 240 colonies. From these in 1907 I sold 30,000 lbs. of honey. For the season of 1908 the drouth cut us short, and our crop does not exceed 15,000 lbs. Where my bees were located in Iowa the season of 1906 was a complete failure; 1907 and 1908 were little better. Most of the honey gathered there for the three seasons mentioned was from other sources than white clover; but in that very locality, Washington County, Iowa, the prospects are good for a white-clover crop in 1909. Here in Central Kentucky there will be nothing doing in the white-clover line for next year, and I shall ship my bees to the mountains of Eastern Kentucky for the season of 1909, where there is basswood, poplar, chestnut, and sourwood galore.

HOW DROUTH AFFECTS THE CLOVER-PLANTS.

I want to tell that farmer, page 1425, Dec. 1, something about white clover. In one way he is right, in another he is wrong. He is wrong so far as honey is concerned for 1909. Take a young clover-plant that started last May, for illustration. With a normal rainfall and plenty of room, room that nothing but a drouth can give, by the first of November, in my locality, this plant covers the ground with roots and runners in a circle that varies from 6 inches in poor soil to 2 feet in the best soil—an average of about a foot to the plant; and with a normal amount of rain the *next* May and June it makes a hundred blossoms or more. Now, if the rain stops, say, the first of July, this plant covers but one-third of the space it would have covered had the rain continued, and sets but one-third as many blossoms to bloom the following June. The honey from these young plants, therefore, is cut two-thirds. On this point the farmer was right. If all our plants were started from the seed in 1908 we could count on at least one-third of a crop this year; but this is not the case. During the second year of the life of this young plant, with a normal rainfall it continues to grow, and sets new roots and runners, also embryo blossoms, and by Nov. 1 of the second year it covers a larger space and is ready to set almost as many blossoms as it did the first year of bloom. How-

ever, this first year of bloom of a clover-plant is the best year for honey, as the blossoming period lasts longer. The old plants seem to mature their bloom in a shorter period, therefore shortening the honey-flow in proportion.

One thing I have not mentioned is that the growth made by a white-clover plant this year blossoms next year and then dies out. That is, if a plant covers a space a foot in diameter the first year, this growth blossoms the second year, and by July 1, in my locality, stops blooming and starts a new growth of runners and roots that will produce blossoms the third year. Now, if there is no rain after July 1 of the second year, there will be no blossoms for the season following, and the part of the plant that produced the bloom during that second year will die out the winter following, just as the stalk of a raspberry-plant that bears the fruit this season is dead by the next spring and a new one takes its place. This new growth, under normal conditions, will keep spreading until, as Dr. Miller says, it might cover a whole acre; but as soon as the first dry year comes it dies out the winter following. This is one instance when clover winter-kills.

Another instance of winter-killing is when it rains for several years in succession and the ground becomes so thickly set in clover that it starves itself out, just as corn planted too thickly literally starves, so that the crop is destroyed.

Where the ground is covered with this growth of old clover there will be very few new plants started, as the old clover starves the young plants to death. That is just what happened last season. The old clover covered the ground so thoroughly that there was no place for new plants, and, besides, there was no rain to enable the old plants to make a new growth for this coming season. There has been some rain lately, and there will be a few blossoms here and there, and some of these old plants will hold enough life through the winter to begin to grow next spring; and, aided by the millions of young plants that start next spring, will make a large growth this next season provided the rains come, and in 1910 the fields will be white again.

THE EFFECT ON HONEY CROPS.

These drouths are a blessing in disguise. First, they keep down increase, as bees winter badly after one of these dry years, thereby keeping the country from becoming overstocked. Second, our bumper crops come from the first year's bloom of plants started from the seed the year before. The year 1901 in the North Central States was very dry, while 1902 was very wet. The year 1903 gave the largest crop from white clover on record. Take another instance: The year 1906 was dry at Dr. Miller's, in Northern Illinois; 1907 normal, and 1908 gave the doc a bumper crop. Here at home, the year 1900 was dry; 1901 wet, and in 1902 the yield was 100 lbs. per colony; 1902 was wet again, and the yield in 1903 was 100 lbs. per colony. The fall of 1903 was very dry, and there was no honey in 1904; 1904 was dry again, therefore no honey in 1905; 1905 was normal, and we had a good crop in 1906; 1906 was normal, and there was a good crop in 1907. The fall of 1908 was the driest in 37 years, the rainfall from June 10th to Nov. 1st being less than 6 inches. On this account I am looking for no honey from white clover during 1909. To prove my faith in what I say, I will take, as my share, 10 lbs. per colony of white-clover honey gathered by my bees in 1909 to any man who wants to run them on shares.

PROSPECTS FOR NEXT YEAR.

This white-clover question is the most important theme for discussion in the whole white-clover belt. I know positively that there will be no honey from white clover this year, so I need no supplies, and I do not need to rush my bees in the spring to prepare for a flow that will not come. I shall ship them off to the mountains, where there is a chance for a light flow at least. In case the rainfall is normal next spring, and a good crop of white clover starts, instead of having the blues and letting my bees die out I shall increase them and prepare for 1910. Or during 1909, if the rainfall is normal until the 1st of July, we can stand a dry spell, as the clover has made a new growth that has never bloomed, and will produce a honey-flow in 1910. Again, it may be dry until the 1st of July, and the clover-flow for 1910 will still be assured if there is a large amount of rain from July 1 to Nov. 2. I am talking from actual experience, and I have no theories to advance. That farmer who wants more bees this year has something yet to learn about clover.

White clover in a normal condition Dec. 1 is, nine times out of ten, still in a normal condition April 1st; whether the winter is wet or dry, or a hot or cold one, the result is just about the same. It is almost impossible to kill clover in winter when it is in a normal condition. In wet soils that heave things out of the ground by freezing and thawing, white clover will manage to have enough roots sticking in the ground to maintain life. Tramping clover while frozen will kill it. A dry fall will not ruin *young* white-clover plants; but it is death to the *old* ones. There will be a bitter wail from bee-keepers in the white-clover belt next spring, as 90 per cent of the clover is already dead that would produce honey in 1909.

Valley View, Ky., Jan. 5, 1909.

BEE-KEEPING IN NEW ZEALAND.

Some Questions for Dr Miller on Queen-rearing.

BY H. BARTLETT-MILLER.

1. In Dr. Miller's description of queen-raising in his "Forty Years Among the Bees," would it not do to brush the bees simply from the comb of the queenright hive into the cell-building hive instead of doing that, and changing the hives as well? What is the object of changing over the hives? Dr. Miller does not explain that, and for women it is heavy work.

2. Will you ascertain from him whether or not the good results of the foundation plan, that proved an exception during 1902, was repeated in succeeding years, as Dr. M. himself expressed it?

3. Regarding hustlers capping honey greasy or watery, would you call this queen good enough to breed from, for Italianizing my apiary? Dec. 5, 1907, being then in her second year, she swarmed, with bees to cover only four Jumbo frames The honey season had just then com-

menced, and for eleven weeks we had little or no rain, and the season was so foreshortened as to be almost a failure—any way a poor one. Jan. 19, 1908, I placed her with two frames of brood only (no honey to speak of, as she laid up to 19 cells wide beneath the top-bar, and 14 wide against the bottom-bar on a splinted frame) inadvertently on the old stand, and had removed five frames of brood (hive is ten-frame). At the end of the season, i. e., on March 15, the hive contained nine of the frames *literally* full of honey from top to bottom bar, and end to end. The tenth frame had about half brood on both sides, and a little honey or pollen. All the honey was capped dark-looking, and quite unpleasant, to my liking. There are few Italian colonies here (I have only five), and I am inclined to call such a queen a good one; but how does she compare with your experience? The eight frames in the hive at the time of taking her brood away contained wired sheets of foundation, full sheets. The queen was imported from Australia.

This spring, on August 2 (corresponding to Feb. 2 in your climate) she had three frames about three-quarters — perhaps slightly more — full of brood, and now, at the beginning of September, I am putting her in a nucleus to obtain breeding comb and lengthen her life. Is this correct? Her bees would shortly have swarmed had I not removed her, as we have had a spring drier and sunnier than I have ever known before.

White clover is our main honey crop, and this is a dairying district. I dare say other plants assist considerably, as dandelion is very common in pastures; and in a dry season that weed-pest, pennyroyal, flourishes over 24 inches high, even on the dryest land, and has had to be included in our schedule of weeds in the noxious-weeds act. Pennyroyal honey has a slightly unpleasant taste, but not unbearable. It yields in dry seasons enormously, judging by the bees and other insects upon it.

I should add that half of my black colonies last autumn had to be fed, though this was partly due to too much humbugging in a season that turned out a poor one. But the Italian colony referred to had some manipulation also.

4. On page 799, July 1, Stray Straws says, "Smoking not allowed during office hours, etc.," which you endorse; but can you not put it in again to read during *any* hours?

5. Is not our New Zealand bottom-board superior to the Danzenbaker? It is simply a flat board two feet long by the width of the hive, having in the front a V ⅜ inch deep, cut from the full hive width in front to the apex of the V, 4 inches back, so that, to regulate the width of the entrance or shut the hive right up, it is only necessary to slide the body to or from the front edge. In hot weather the body overlaps the alighting-board, which is sloping, and attached or not, as desired, to the cleats beneath the bottom. With the Danzenbaker one must have a block of wood to close the entrance, I having used a frame; and to do so during a case of robbing, the bees actually moved the frame end away so as to get past it. This could not occur with our V-shaped bottom and hive drawn right to the back edge of the bottom-board. I have ten Danzenbaker bottoms in use, and am doing away with them gradually, as our climate does not warrant their use. We have no snow, and frosts are gone by 10 A.M. in the depth of winter. Every frosty night means a gloriously warm day, and bees fly whenever it is not wet.

Kihikihi, N. Z.

[Dr. Miller, to whom this was referred, replies:]

1. The object of the whole proceeding is to have all the bees except the field force in the queenless hive while leaving the brood with the queen, and it seems the quickest way to do it is to exchange hives. We thus have in the cell-rearing hive not only all the very young bees, but a younger lot of field bees as compared with those of the other hive. If we "simply brush the bees from the combs of the queenright hive into the cell-building hive," we have in the cell-building hive only the very youngest bees and the older part of the field-bees; whereas by the changing indicated we leave in the cell-building hive *all* the bees of the two hives except these older field-bees. One can hardly think of a better assortment of bees to start and complete queen-cells.

If it be too heavy work to lift the hives, the change can be made by merely changing frames.

The whole thing looks fussy on paper, and between you and me it *is* fussy. Moreover, there is no need of any such fussing. I had supposed it necessary to have in the cell-building hive no brood except the one frame for cell-building. I have found since that no such necessity exists. If a frame partly filled with comb freshly built be put in the center of the hive, the bees have such a strong preference for it that no cells to speak of are built on the old combs. So, instead of all the fuss detailed one merely needs to change the queen from one hive to the other, which is simple enough. In actual practice, all I do now is to put the freshly built comb in the center of any colony made queenless, and I get cells of best quality. It is very, very simple.

2. It works well in many cases, but can not be put down as reliable in all cases.

3. A queen whose workers cap honey watery is out of the question for comb honey, but may be all right for extracted. That aside, I should say that the question whether a queen is good enough to breed from should not be settled merely by the record of her performance. The question is not merely, "How well has she done?" but "Has she outstripped others?" If she is the best you have or can get, then she is good enough to breed from. What you report of the performance of that queen was likely excellent, considering the poor season.

Once a queen has her reputation thoroughly established, your plan of keeping her in a nucleus is excellent.

But we do have early swarming here — not, of course, up here in the North, but remember that some of our Southern States are nearer the equator than you are.

4. Your amendment with regard to smoking is good, and is adopted in some cases. As civilization advances it will be more general.

5. Hardly worth while discussing which is better when we have something that is better than either — a plain shallow box two inches deep, with an open-work rack to put in during the time when bees would build down.

HEADS OF GRAIN

FROM DIFFERENT FIELDS

SUPER BELOW BROOD TO DISCOURAGE SWARMING; A LARGE ENTRANCE MEANS BROOD IN SUPERS.

On page 1384, Nov. 15, Joseph Tinsley tells of putting a super under the main hive to prevent swarming. While I believe this would be a preventive, would it not tend to a decrease in the working force above the hive-body and thus result in unfinished sections? and would it not increase the danger of a queen laying in an upper super to have a very large entrance to hive? In regard to this last question I have tried almost all sizes of entrances, and always found that, when I got above a medium, there would be brood in the super. Perhaps my case is an exception.

Enid, Pa., Dec. 14. JOHN R. LOCKARD.

[This was referred to Dr. Miller, who replies:]

It is the Simmins plan, giving room below the brood-nest for the bees to build in, and, as fast as they get well started, putting above the brood-nest what they have started, and giving fresh room below. The claim is that bees will not swarm so long as they have room for fresh building below the brood-nest. For some reason the plan has never taken much hold in this country.

It hardly seems that it should interfere with work above the brood-chamber as you fear. A common practice is to put an empty super under the first as soon as the first is about half filled. Instead of this, if the empty super be put under the brood-chamber it ought not to interfere with work in the other supers more than if the empty super were put directly under the other supers—possibly not so much.

You seem to imply that putting an empty super under the brood-chamber would enlarge the entrance. Why should it make any difference in the size of the entrance? I'm not sure what you call a large or medium entrance; but I use what I think would generally be called a large entrance—two inches by the width of the hive—and I never discovered that it had any tendency toward brood in supers.

THICK UNCAPPING-KNIVES PREFERRED; CONDITIONS IN WASHINGTON.

On page 1250, Oct. 15, Louis Scholl advises a common long butcher-knife, well sharpened and kept free from the gumming of honey by frequently washing in cold water. When I was in California in 1897 I worked in Mr. W. T. Richardson's apiaries of 900 colonies as foreman, and we had six honey-knives, all made with straight handles, but with guards like a bowie knife. The blades were 13 inches long, sharp on both edges, and beveled on both sides the same as the Bingham is on the lower side, but were made of thicker metal than a common corn-knife. Like Mr. Scholl we always uncapped with a downward stroke, but kept our knives in hot water, each person using two knives, one in the hand and one in the water, changing as occasion required. Mr. Richardson used hives 14×20, 12 inches deep, and supers the same, with the frames put in the short way in two of his apiaries; the other was the old Langstroth portico pattern. I like the straight knife with the downward stroke.

I took 45 gallons of as fine clover honey this year as I ever saw, from eight stands, spring count, and had only one swarm; but after the honey-flow was over I increased to 17, and have all in winter quarters.

While Northwestern Washington is not much of a bee country, yet if one takes proper care of the bees they will pay their board and make the keeper something besides. It does not get very cold here, but it rains from November till May. It is raining now almost continuously.

I use both deep and shallow frame supers, and like both. J. C. BALCH.

Ferndale, Wash., Nov. 18.

[This question of the size and shape of the uncapping-knife is getting to be interesting. We should like to hear from others who have used the *straight* knife. Then is there an advantage in having the blade heavier in order to hold the heat longer? Let us hear from others.—ED.]

A THIN UNCAPPING-KNIFE OF GOOD STEEL PREFERRED.

I have seen the controversy about uncapping-knives, whether they should be used hot or cold, etc. I should like to give my opinion on this subject. If the Bingham knife were made about half its present thickness, and as good material put into them as there is or *was* in the Novice knife, it would help matters considerably. A thick knife will tear combs that a thin knife will cut easily.

About grinding or keeping the knife sharp, the frame used is a great factor. Use a frame perfectly free from nails, wires, staples, tin offsets, etc., and you solve the problem to a great extent. The next frames I order will be made so the nails can be countersunk out of the way.

C. F. HOCHSTEIN.

Mangas, Pinar del Rio, Cuba.

PREVENTING THE ENTRANCES FROM CLOGGING.

During severe weather in winter I have noticed little pools of water gather in the entrances of the hives, which sometimes runs out, but just as often it freezes when it strikes the cold air, thereby clogging the entrance. Last winter I placed a hive with the back end about an inch lower than the front end, and at no time during the winter did I find a particle of ice or any dead bees clogging the entrance, although it was only 4 × ⅜. This colony was the strongest one in the yard last spring. By placing the back end of the hive lowest, the moisture from the cluster of bees runs to the back end of the bottom-board and freezes so far from the entrance, leaving it open all winter. I am using an entrance 3×⅜ this winter, and believe this is the best way to keep them from being clogged. A storm-door should be placed over the front of the hive to prevent the snow from falling on these entrances. Of course, when spring comes, or the rainy season commences, the hives should be tilted back until the front end is the lower. BERT SMITH.

Marathon, Iowa.

[We have our hive-bottoms slanting toward the front, and we seldom or never have any ice accumulate and clog the entrance. We believe

it is a mistake to let the water run toward the back end and freeze. A layer of ice just under the cluster of bees can not do any good, and may do harm.

Better slant your bottoms toward the front and keep the entrance open by raking out the dead bees occasionally. If you keep them out of the way, ice should not block the entrance as you speak of.—ED.]

THE EFFECT OF DROUTH ON THE VARIOUS CLOVERS GREATER IN SPRING AND SUMMER THAN IN FALL.

In regard to the drouth killing clover, I would say that, in my experience, it depends very much on the kind of clover. I never saw a fall drouth kill common red, and have seen the Dutch or white clover entirely ruined thereby for the following season. Of course, any land where white clover has once seeded will send up a crop from the seed remaining in the land the next spring. I have witnessed this twice; but from some cause the young growth failed to furnish any honey worth mentioning.

A spring or summer drouth is what hurts common red clover, catching it before the roots have struck very deep into the soil. I should not be much surprised if Dr. Miller's, that seems nearly dead, would come out all right if it does not put off raining too long.

I find it useless to sow red clover on spouty land, as any unusual wet weather will cause it to be unhealthy, even if it should live over winter. It doesn't seem to suffer so much from heaving—the natural expansion of the soil from freezing—as from a kind of spewing, which is very noticeable on roadsides during a freeze just after a rain. The ground seems to give up the water, which just keeps rising and freezing until it forms ice on the order of honey-comb, one or two inches thick. Now, if this spewing takes place around a clover-plant the ice first freezes about the crown; and as it keeps forming beneath, the crown has to come off or the plant pulls off, with about the same result in either case. The thorough filling of the soil with the fibrous roots of white clover or blue grass seems to act as a protection from spewing, as it is notably absent in such places.

Odin, Mo., Dec. 24. D. B. THOMAS.

A SUMMER AND FALL DROUTH DESTRUCTIVE TO THE CLOVERS.

Your old farmer friend is quite right when he said that a drouth in the fall does not kill white clover. That is in accordance with our experience here. The white clover will stand a pretty severe drouth in the fall; but when we have a continued drouth through July and August the bee-keepers here know for a certainty that there will be no clover honey the next summer, which is just our case in Northern and Central Kentucky. We have not had any rain to speak of since the 5th of June, and our ponds and cisterns are still dry; so we are not counting on any clover honey next summer; but we have never failed to get a good crop of surplus honey, and plenty left for the bees from the aster, for more than 20 years until this fall, which is the first failure we have met. It is also fine honey for table use. Almost every one here likes it better than white-clover honey. I have always lived on a large farm, and have been a large producer of extracted honey for over 20 years, and I have always watched the clover crop with great interest, and several times I have known a drouth through July and August to kill the clover. Your farmer friend is right again when he said that, when the rains come in the spring, the white clover will spring up thick. That is all true if we have rain next spring. There will be a fine crop of white clover come up from the seed; but the clover that comes from the seed in the spring does not produce any honey until the next year. This is not theory or guesswork, for I am writing from practical experience; but soil and climate might make some difference. Our soil here is limestone soil, with clay subsoil and no sand.

Boyd, Ky., Dec. 26 H. C. CLEMONS

CLOVER FREEZES WORSE IN WET GROUND.

I have noted that clover freezes out most in wet ground. I should think that a dry fall and winter would be favorable to clover except that it would not be as strong and luxuriant. It certainly would not freeze out as badly in a dry winter as in a wet one.

The winter-killing of clover is due to what is called freezing out. The frost in the ground pulls the clover out of root. A wet, freezing, and thawing winter is very hard on clover, and you will find in the spring that the frost has pulled the clover stalks or roots out of the ground four, five, or six inches. The water on the ground freezes in a comby form, and not in a solid cake as on a pond, and these combs will rise up in a single night one or two inches; and as they rise up they pull the clover-stalk out with them. This occurs particularly in low wet ground, but will occur on any ground that is wet from rains or melting snow.

Butler, Ind., Dec. 26. L. H. HIGLEY.

A GOOD CLOVER FLOW FOLLOWS A WET FALL.

I have been a farmer and bee-keeper all my life, and I have seen exposed hills that were a mass of white clover dry out so that there was not a live plant left when winter came, although the bluegrass stood it all right; and I have noticed that, when we have a dry fall, we have weak clover in the spring, and when we have a wet fall we have lots of young clover, and generally a good honey crop the next year unless it is too wet and cold when it blooms.

The only time I ever saw wet hurt the clover was one winter years ago when the ground was frozen and it rained and froze as soon as it struck, until there was an inch or more of transparent ice on the ground which stayed for a week or more and smothered the clover. I think the clover is in good condition here this winter because we had a very wet spring, and more grass than the stock could eat, which protected the clover during the drouth. J. W. SCHLENKER.

Ankeny, Ia., Dec. 21.

CLOVERS ALIVE.

I have examined clover closely this fall, and find it green and alive where other grasses seem dead. I have examined it on both clay and gravel soil with the same result.

East Trumbull, O. W. C. EASTMAN.

HIVES WRAPPED WITH PAINTED CANVAS; TALL HIVE-STANDS USED ON ACCOUNT OF DEEP SNOWS.

To prepare my hives for winter I wrap them with burlap and then cover this with a square piece of painted canvas or tar paper folded down so as to shed the water. I formerly covered the hive with a drygoods-box, but I do not like that plan, as the inside of the hive seems to get too warm. The method of wrapping the hives provides a covering that is wind and water proof.

We have very deep snows, and I keep all my hives on high stands on this account. I lower them, however, to stands only eight inches high in the spring, keeping each colony in its previous location. C. A. MANGUS.

Altoona, Pa.

[You do not say any thing about any method for holding the folds of painted canvas or tarred paper tightly down around the hives; but we suppose you use, of course, either a string or strips of wood tacked on the sides and ends of the hive.

As you say, a tight water-proof cover of painted canvas or tarred paper is better than a drygoods-box. Unless said box has some sort of roof to keep snow or rain from leaking through, it is worse than nothing.—ED.]

MOVING BEES.

I shall move my bees about 100 yards this winter and would like to have your advice.

Wofford, S. C., Dec. 12. S. CHEATHAM.

[It is difficult to move bees a short distance in a warm climate like yours, for we assume that the bees can fly nearly every day in winter; but it can be done in this way: Move the whole apiary to a point some two miles away from their present location and keep it there about a month; two or three months would be better. Then move them back to the spot where you desire them. This would be the only practical way to move them 100 yards. By taking the bees away two miles or more and keeping them, say, for at least a month or two months, you would cause them to lose their sense of the old location; and when you put them back they will go to their new stands, although probably a few might return to the old location, but we think not many. —ED.]

BEES DISINCLINED TO STORE IN DRONE COMBS.

On page 1425, Dec. 1, you ask for information regarding the use of drone comb for extracted honey. I have had considerable experience along this line, and my conclusions are against drone comb as a rule. I have several times underestimated the amount of foundation needed, and had to start swarms on starters. Result, a lot of drone combs which I placed above excluders in extracting-supers As a general thing, bees store in the worker-cells, leaving the drone-cells clean and polished, ready for the queen to lay in if she can get at them. If they are crowded they will store in them; and, indeed, they generally start to fill them about as soon as they start capping the worker-cells. The only exception to this rule, I have noticed, is in the case of a freshly hived swarm, which will store in drone comb freely. I fancy I may be missing the point in this letter. Perhaps it is intended that all extracting-combs should be drone only. Probably in that case bees would store all right. Drone comb does certainly extract a little cleaner than worker.

WM. L. COUPER.

Cannington Manor, Sask., Dec. 17.

THE LEBANON BEE-KEEPERS' ASSOCIATION.

Our association was organized two years ago with eleven members, and now has a membership of 46. They control 1350 colonies which produced, in the season of 1908, 20 tons of nice comb and extracted honey which finds ready sale in our local markets. The ruling price is 20 cents.

The following officers were elected to serve for the year 1909: President, H. K. Beard; Vice-president, Wayne D. Shilling; Secretary-treasurer, E. L. Brown; Directors, J. H. Miller, A. M. Schaffner, and W. H. Marks.

Lebanon, Pa. E. L. BROWN, Sec.

MEETING OF MASSACHUSETTS SOCIETY OF BEE-KEEPERS.

The third regular meeting of the Massachusetts Society of Bee-keepers was held in Ford Building, Jan. 2, with a large number present.

President Reed introduced Mr. W. R. Brooks, of the Amherst experiment station, who spoke on certain crops with reference to their value to bee-keepers. Among others he spoke of the high value of the clovers from two standpoints—one as a honey crop, and the other as a crop by which old worn-out land might be renewed. He gave a very detailed account of the fertilizers to be used and those not to be used, and spoke of the different kinds of clover for various purposes.

Lists of wild flowers were given—early spring ones for pollen, and others for pollen and honey.

After Mr. Brooks' lecture some time was occupied in discussion of a proposed law for the extermination of bee diseases.

The next meeting will be on the evening of February 6, Ford Building, Ashburton Place, Boston. X. A. REED.

QUESTIONS CONCERNING THE SPIDER PLANT.

On page 1262, Oct. 15, I notice reference to the spider plant for honey. I am interested in that plant, and wish to grow it. What ails the plant? Why do not more bee-men grow it for honey? Is there any thing about it that will hurt the bees? THEO. RYCKMAN.

Ithaca, Mich., Dec. 15.

[The spider plant is a beautiful ornamental as well as a honey plant. It requires good soil, and in most localities it will not grow spontaneously. It must be cultivated, and the weeds must be kept away until the plant has attained a fair growth. Its near relative, the Rocky Mountain bee-plant, grows wild in a mountainous country. You can grow the regular spider plant in Ohio or in most of the Northern States; but you will not be able to grow large fields of it and make the venture pay from a honey or a money point of view either. We tried it some 25 years ago on our honey-farm, but it did not pay in dollars and cents.—ED.]

POULTRY DEPARTMENT

CONDUCTED BY A. I. ROOT.

STARTING EGGS UNDER HENS BEFORE PUTTING THEM IN AN INCUBATOR, ETC.

When I started I bought what I thought was a good incubator, but it was a very poor machine. I tried putting them ten days under hens and then taking all into the incubator and setting the hens again. I found there was no trouble in finishing the eggs when they were half hatched. I tried starting them in the incubator, and then putting them under the hen, but that was very little better than doing it all with the machine. I used that machine for some years in connection with hens. I could double the capacity of the hens. I would set about ten at once.

About this time I conceived the idea of doing without a fire in the brooder in May. I made a fireless brooder and put a batch of chicks in it. I raised about all of them, as I remember now. I made another one and put the next lot in it. The weather was sunny and warm when I put the first lot out. When the second lot was ready it was a rainy spell, and cold. These all died. I see now it was too poorly made. That was enough of the fireless brooders for me. I have used fire ever since.

CHILLED EGGS; SEE PAGE 648, MAY 15.

I have had considerable experience with chilled eggs in the 24 years I have been in the business. Sometimes they will live, and at other times all will die when you wish very much they would all live. I went away one March day, and a hen came off the nest after dinner. I came home at six o'clock and put her on, but the chicks were dead. I had paid $5.00 for the eggs. My friend, who lives near, took several settings of eggs out to test. He forgot and left one, and found it the next morning. A little skim of ice formed that night The egg hatched two days late. This egg was well on the way. In August a hen had hidden her nest under a bush and in the way of the surplus water. During a thundershower in the afternoon the eggs were washed down the waterway some distance. We found them the next afternoon. They hatched well. I have at different times left a tray of eggs out all night in the cellar when the temperature was between 50 and 60. But few will be killed if it is in the last half of the hatch. In the first four or five days the eggs will stand but little abuse.

MANY CHICKS TO A HEN; SEE PAGE 238, FEB. 15.

I wonder how many will try putting many chicks with a hen because A. I. did so well. Don't forget that he had one of the best-bred hens as a mother that you can breed. A Leghorn is a good mother, and a game better yet. You have light weight, so none are hurt because of the tramping, and you have the good care that comes with the game and Leghorn. I should like to have A. I. try ten hens and see if about two-thirds of the brood would not go bad. It takes a good mother to care properly for many children of any kind.

My father and I have feed tons of alfalfa, cow peas, and some soy-bean hay, and our experience says that there is no hay or feed equal, as a milk-maker, to soy hay. This is not saying alfalfa is not a grand feed, but we do know that when we stopped feeding the soy hay we had to add grain to keep the cows in the same production. I do not keep cows, but my father does or did, and has been a careful feeder, and likes to try all the new feeds. We raised some vetch hay also.

I use saciline for green food part of the time now. It is a permanent plant, and grows 7 feet high. May 21 it is from 4 to 5 feet high. It is as sure as taxes. The hens eat it readily. The seedmen pushed it some 12 years ago. Mine is that old, and is getting stronger every year. I like it for shade and for the chicks too.

W. W. KULP.

Pottstown, Pa.

Friend K., your plan of starting eggs under a hen before putting them into an incubator is what is described as the "bifold method," in friend Grundy's little book entitled "The Grundy Method." No doubt many kinds of incubators would give a better hatch if the hens give the eggs a start. But the principal difficulty, as it now occurs to me, is in getting a sufficient number of sitting hens started at one time to keep even a small-sized incubator running. If you take eggs away from the hen after the first five or ten days, and give her a fresh lot, that might help the matter somewhat—at least after you get agoing. But let us look at it this way:

In this book, the Grundy Method, he has made another discovery or invention; and this discovery is that an ordinary hen can take care of 30 or 40 chickens, to say nothing of the 70 chickens that I gave to one hen; and Grundy recommends giving a hen a large number of chickens, and then calls it a "fireless brooder;" and I must confess that a sitting hen might be quite an important adjunct to any sort of fireless brooder—that is, if you give her 30 or 40 chicks, or double that amount, as I did.

Just one point more, and then we are ready for our summing-up. Somebody else made the great discovery that you can start eggs with an incubator and then give them to sitting hens to finish. Now, if it is a great benefit to let the hen *start* incubation, and another great benefit to let them do the *finishing* of the incubation, and a *third* great benefit to give a sitting hen chickens *after* they hatch, why not adopt the old way from beginning to end, and give one hen all the chickens that two or even three hens or more hatch out, as the farmers' wives are doing and *have* been doing for ages past?

In regard to the plant called saciline, I was one of the first (I *regret* to say) to help boom this great forage plant, and it has been growing on our grounds more or less every season for perhaps a dozen years; but although we have it in what we call a rich place it never has made a remarkable growth, and, worst of all, we have never found a domestic animal that would eat it or pay any attention to it. The hens *may* have been helping themselves to it, but I have not noticed them doing so. I will try to keep watch next season. It is certainly very important just now to hunt up the very best forage-plant for poultry that the world affords; but so far I have never found any thing to come anywhere near lettuce, especially the head lettuce grown in Florida.

While I am about it, this Grundy book contains another great secret. A method has been advertised in the papers for chicken feed, for only 8 cents a bushel; and this book tells us it is shredded alfalfa. In order to get chickens to take it to advantage, boiling water is poured over it in a tub the night before. The next morning it is mixed with corn-meal middlings and bran. This feed during the winter time gives the fowls a reasonable amount of green food. But I do not see what there is new about it. Alfalfa has been used for years in just this way.

SELLING SECRETS; "SPROUTED OATS;" CHICKEN FEED FOR "ONLY 8 CTS. A BUSHEL," ETC.

While there are some things that seem to be wrong and unfair about advertising secrets, there is one feature in connection with it that promises great good to the poultry-keeping fraternity. *Most* of the men who have secrets to sell have devoted considerable time and care to their experiments. The principal fault I have to find with them is that they do not furnish a nicely gotten-up and decent-sized book for the 50 cents, $1.00, or $5.00 they ask. And then by *all means* let the purchaser of the book show it to his neighbor in just the way people are in the habit of showing their periodicals, books, and every thing else to their neighbors in a neighborly way. As an illustration, I saw advertised in some of the poultry-journals "The Angell System of Securing

Fertile Eggs." The price was 50 cents. Well, I sent the money without signing any agreement not to divulge, etc. The answer came back that the book would not be furnished until I signed the secrecy document. But I wrote back, and told them to return the money, under the circumstances, and I begged to be excused for not signing such a pledge. I thought I had failed for once in getting a secret; but this morning I found on my table a little book of four and a half small pages. You see it is a pretty hard matter to *return* 50 cents instead of sending a book that costs less than a nickel. Now, this Angell system *is* something new—to me, at least—and I am fully satisfied it is valuable. You want a yard big enough to hold, say, a dozen hens. This yard is divided into two parts. Have the nest-boxes in the partition between the two parts. Every morning the twelve hens are put in one apartment, and the male bird in the other one. Every hen that lays an egg or goes into the trap-nest goes *out* into the apartment with the male and is promptly served. When night comes, the laying hens are with the male bird. Those that do not lay can be removed, and the next day put in the twelve you have good reason to think *are* choice laying hens. In this way I can readily believe that every egg, or almost every one, will prove fertile. Every morning the male is alone in the yard by himself; and the author says he should not be allowed to serve more than twelve hens, in order to have every egg fertile. The book does not tell us about hens that lay every other day or every third day. In fact, there are a lot of points connected with this method that are not discussed or made plain. There is a diagram of two pens with nest-boxes between them; but I can not fully understand it, to save my life. There should be plain pictures and a record of experiments. Perhaps the author will get out a bigger book further on.

There are some bad misprints in this little book, which muddle the reader. For instance, in one place where he means to speak of *nest-boxes* the printer has made it *next* box. I was obliged to spend quite a little time before I found out that the writer meant *nest-box*. And this kind of cheap work has been true with nearly all the secrets I have purchased.

I am glad to say that this Angell system is the most valuable secret I have yet gotten hold of in this way. Even if it is imperfect, it suggests a new field for experiments, and I do not know but the 50 cents is pretty well invested in this brief little book.

Now, I want to say a word more about this advertisement that is in all the poultry-journals, of feed at 10 cts. a bushel. Since that came out, another advertisement reads "Only 8 cents a bushel" The advertisement says this is not sprouted oats nor beet pulp, but a real food. On sending for the "Free Booklet for Facts" we read:

> I invented the cheapest *good* poultry food known, and it costs only 8 to 15 cents a bushel. And it is not sprouted oats nor beet pulp, but a *real food*.

In another place we read also:

> We have increased the weight of hundreds of fowls two to three pounds in ten to fifteen days, and often doubled their market value.

When I first read that, I thought it must be a mistake in the print; but after I received the $2.00 book I found the same thing stated in a way that can not be misunderstood. The author claims that from two to three pounds may be gained on each bird in fifteen days, at a cost of only from 6 to 12 cts. each. This wonderful feed that costs only 8 cts. a bushel, which the author claims he discovered, is scalded clover hay mixed with cornmeal middlings and bran sprinkled over it. The clover or alfalfa is cut into lengths of ¼ inch. It may be that our friend Fred Grundy did discover it; but I can well remember my father feeding his horses on just the same thing fully sixty years ago; and chopped clover has been scalded and fed to fowls in winter time as a substitute for green food as long as I can remember. The price of this book, "The Famous Grundy Method," is $2.00.

I hardly think there is a patent on what is called the alfalfa meal; but such a patent would be as sensible as the one the "ten-cents-a-bushel" man claims to have on his sprouted oats.

SELLING SECRETS—MORE ABOUT IT.

We clip the following from the *Rural New-Yorker:*

> Not a day passes that we do not receive a question about one of the many "poultry systems" so widely advertised. Some secret connected with one or the other of these "systems" is offered at from one dollar to $10. The buyer is to sign a pledge not to reveal this great "secret" after he gets it. In one case a reader wrote for the "secret" and was informed that $5 would buy a book giving the whole story. Now, the truth appears to be that all these "systems" contain more or less sensible information and suggestion. Most of it is old, and probably 90 per cent of it has been printed in *The Rural*. For example, great stress is laid on a cheap feed that can be made for a few cents a bushel. After you pay your money you find that this is sprouted oats. The oats are soaked in warm water, and then kept in a warm place until they start sprouts several inches long. Of course, a few quarts of oats sprouted in this way would make a bushel in bulk! We have told this over and over—and it is about all you will get as your great feeding "secret." Many a poultry-keeper who reads this will think of the good dollars of which he relieved his financial system with hopes that were like sprouted oats.

In regard to the above, some sort of book is certainly better than charging a dollar or more for the simple matter that could be put on a postal card; and I am glad to know that the secret-venders are giving us a book that contains more or less valuable matter. But this signing a pledge "not to divulge" is, it seems to me, a ridiculous piece of business. It is behind the times, and those who go into it ought to be ashamed of themselves. I have never signed any such paper, and yet I have always got all the books and secrets. When these chaps once get the money into their clutches they do not let it get away.

There is another thing that is not quite straight. Most of these systems claim they have a patent right on the arrangement. For instance, the "natural-hen incubator" man has been taking money for years for a "right" to use the idea of having a little dooryard hitched to the box that contains a sitting hen; and other venders of these books claim they have still another patent on the same arrangement; and yet our poultry-books and agricultural journals have for years past described the same thing over and over again. Their patent, or "patents applied for," are about as sensible as the patent on the churnless butter. When I read it to Mrs. Root she said she remembered seeing her mother make butter when she herself was a child, in *exactly the same way;* and my stenographer who is taking down these words says he made butter, when he was a boy, in almost no

time simply by the use of a little paddle. And while it is true that, whenever every thing happens to be just right, you can sometimes get butter in *one minute*, it is also true that it may take two hours when every thing is *not* just right.

THE "SPROUTED OATS" MAN.

There is finally at least one poultry-journal in the United States that has turned in with GLEANINGS and the *Rural New-Yorker*, and given the "feed for ten cents per bushel" some free advertising. It is the Petaluna Cal., *Poultry Journal*. Here is part of what they say:

You purchase a bushel of oats, sprout them, and you have two bushels of feed. A merchant might as well advertise "How a family can get a vegetable food at half price" by paying $5 for a book, and then tell the sucker who purchased the book that "beans" could be soaked and boiled to double their original capacity, and would do to "fill up on," and thus be a great saving to families.

There is one mistake in the above. Instead of a bushel of oats making *two* bushels, Edgar Briggs says in his $5.00 book that a bushel of oats will make *four* bushels of the very best kind of chicken feed.

DOSING CHICKENS WITH POWERFUL DRUGS.

Every time I pick up a poultry-journal and read about dosing with this, that, and the other vegetable or mineral poison, it makes me sick. The world is emerging from the silly notions people have about taking *poisonous* substances to make them *well*; but it would almost seem as if it were just getting to be the fashion to dose chickens in a like manner. While having this in mind it rejoices my heart to see that at least one poultry-journal is making a revolt, even if it does run the risk of losing some advertising. That one poultry-journal is one of the handsomest and best that comes to us in the way of an exchange. This publication is called *Poultry*, and is published by Miller Purvis, Peotone, Ill. Here is what they say in their issue for December:

If the poultry of this country were given proper care, a good many of those who advertise poultry remedies would be compelled to go out of business, and the poultry-press would lose a considerable portion of the income it derives from its advertising pages.

"THOU SHALT NOT STEAL."

Mr. Root:—Will you spare a moment or so of your time to tell us what to do when local thieves steal honey from the hives at night, as they have done here lately? That you may better judge, I will say that it is not because of ill will toward myself, but is undoubtedly done by idle young men, perhaps aided by older ones. What way is best to proceed to secure evidence and to prevent future depredations? They stole a 32-lb. superful from a poor woman here who has only two colonies.

In conclusion I would say that I appreciate your department very much—perhaps more than any other in your journal. It is a real pleasure and joy to every one trying to do right to know that we have such men as edit GLEANINGS and the *Rural New-Yorker* to fight the Lord's battles and ours.

Pentz, Pa., Oct. 28. J. HOLLOPETER.

After thanking you for the high compliment you pay me by presenting this matter to the readers of GLEANINGS, I give it as my opinion that your people should all go to work and raise the moral tone of your neighborhood. First and foremost, take up a subscription for the poor woman who has only two colonies. Make good her loss; and if you give her a little more it will do no harm. Everybody who helps to lift this burden from one who is helpless will be more *interested* in ferreting out the depredators. Second, I would advise your people to get to work in your State exactly as the good people are now working in Ohio to banish the saloons. The wretches who would rob a poor woman in this way are certainly a saloon product. Put the matter in the hands of your marshal or mayor; and, if necessary, have a lot of citizens sign a petition, and perhaps subscribe some money to pay the expenses of hunting up the perpetrators. Organize a law-and-order league. If you think proper, offer a reward for the one who meddled with the hives. In some States there is a very severe penalty for robbing bee-hives or poultry-houses. Ask somebody competent to give you the law in your State. This matter should meet with prompt attention all over our land — not only to protect bee-keepers but to raise the standard of morals. Perhaps you remember what I said about our neighborhood in Manatee Co., Florida. Chickens roost in open houses adjoining the open highway; and while a third of the population is colored, my neighbor Rood has never lost a chicken by theft in the whole eight years he has lived there. Let us get to work till each and every neighborhood can present as good a record as that. May God help us in our efforts to make a place here on *earth*, where "thieves *do not* break through nor steal."

FLORIDA BEE-KEEPING; HOW TO KEEP EXTRACTED HONEY LIQUID.

Right near the honey-house door, on the south side of the building, Mr. Rood has a shallow box covered with a glass sash, the box and sash being tipped so as to incline toward the sun. In this box are glass jars of honey, I think about all the year round, and this honey stays there in the hot Florida sun until it is used to fill orders. I have just been handling the jars; and although it is between 8 and 9 P.M. the jars are still almost *hot*. He says that, in the afternoon, they are often too hot to handle, but not so hot as to impair the flavor of the honey. This high temperature, with, perhaps, some other influence from the strong glaring sunlight, is almost a sure preventive against candying, even when these jars of honey stand for days and weeks on the shelves of the retailer; and the longer the honey stays in this "sterilizer" the better it becomes, because it is *thoroughly ripened*. I do not know how common this idea is for ripening extracted honey, but it seems to me every bee-keeper should use this "hot-bed" feature. The same apparatus can, of course, be used for a solar wax-extractor. The sash should be hinged so as to turn back against the wall of the building; and to save lifting, a cord and pulley should be attached so the sash can easily be swung up with one hand.

TOLERATING DRONE COMB IN THE APIARY.

Mr. Rood says few bee-keepers realize what it costs to let drone-combs (or even frames of comb containing a few drone-cells) remain in the hive year after year. He declares it is bad policy to keep such combs for the extracting-supers, especially for out-apiaries that are visited only occasionally, for the reason that such drone comb encourages undesirable swarming and probable loss of swarms.—A. I. R.]